



BRITISH COLUMBIA
CENTRE *for* EXCELLENCE
in HIV/AIDS

HIV MONITORING QUARTERLY REPORT **FOR VANCOUVER COASTAL HEALTH**

SECOND QUARTER 2016



BC Centre for Disease Control
An agency of the Provincial Health Services Authority



First Nations Health Authority
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Foreword

As part of the BC Centre for Excellence (BC-CFE) in HIV/AIDS's mandate to evaluate the outcomes of STOP HIV/AIDS programming in BC, we have developed quarterly HIV/AIDS monitoring reports. These reports provide up-to-date data on a variety of key HIV-related surveillance and treatment indicators. Selection of these indicators was achieved through a collaborative process with various Health Authority (HA) representatives. There are six reports in total, one for each HA and one for the province of BC as a whole. In addition, there is a technical report which explains how each HIV indicator is calculated. Data used in these reports come from the British Columbia Centre for Disease Control (BCCDC), MSP billings, hospitalization data from the Discharge Abstract Database, the Sunquest Laboratory database at the Provincial Public Health Microbiology and Reference Laboratory, Providence Health Care laboratory and the BC-CFE Drug Treatment Program (DTP) Database.

The objectives of these reports are to:

1. Provide timely HA-specific information on key HIV indicators which will guide and inform HIV leaders and innovators in the development of future HIV interventions and programs which will ultimately lead to decreasing the burden of HIV in BC. The indicators will reflect ongoing or past successful public health interventions and highlight areas in the HIV care spectrum which require further attention and support.
2. Highlight limitations in our current data due to incomplete or time lagged data and to develop future strategies to improve complete and timely data capture.

These reports are produced for the benefit of individual HA's. As such, we are enthusiastic about your involvement and cooperation regarding the development of these monitoring reports. Please forward your comments and queries to Irene Day, Director of Operations at the BC-CFE at iday@cfenet.ubc.ca.

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Acknowledgements and Contributions



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British Columbia Centre for Excellence in HIV/AIDS (BC-CFE): The BC-CFE is responsible for the conception, preparation and ongoing review of this quarterly report. The BC-CFE provides the data and outputs for Indicators 5 (Hiv Cascade of Care), 6 (Programmatic Compliance Score), 7 (New Antiretroviral Starts), 8 (CD4 Cell Count at ART Initiation), 9 (Active and Inactive Drug Treatment Program Participants), 10 (Antiretroviral Adherence Level), 11 (Resistance Testing Results by Resistance Category), 12 (AIDS-Defining Illness), and 13 (HIV-Related Mortality). The BC-CFE database provides PVL and CD4 cell count testing data, as well as ART use. All PVL measurements in BC are performed at the St Paul's Hospital virology laboratory, thus PVL data capture is 100%. An estimated 80% of all CD4 count measurements performed in the province are captured in the BC-CFE data holdings. The STOP HIV/AIDS Technical Monitoring Committee–BC-CFE is responsible for oversight of the monitoring report. James Nakagawa is responsible for compiling and publishing this report. Lilith Swetland is the editor of this report. Paul Sereda, Dr. Viviane Lima and Nada Gataric perform analysis of Indicators 5–13. This report was conceived and guided by Dr. Julio Montaner.



BC Centre for Disease Control
An agency of the Provincial Health Services Authority

British Columbia Centre for Disease Control (BCCDC): The BCCDC provides the data and outputs for Indicator 1 (Hiv Testing Episodes), Indicator 2 (Hiv Testing Rate), Indicator 3 (New Hiv Diagnoses), Indicator 4 (Stage of Hiv at Diagnosis) and Indicator 12 (AIDS-Defining Illness). The BCCDC is the single provincial agency that centralizes all HIV surveillance through the Public Health Microbiology and Reference Laboratory, which does more than 90% of all HIV screening tests in BC and all confirmatory testing. Olga Mazo, Theodora Consolacion and Dr. Jason Wong are responsible for outputs for Indicators 1–4.

Other Data Sources:

The above databases were supplemented with:

- (I) The BC Vital Statistics database which was used to calculate Indicator 5. The Hiv Cascade of Care and Indicator 13. Hiv-Related Mortality.
- (II) Linkage and preparation of the de-identified individual-level database used for calculating Indicator 5. The Hiv Cascade of Care was facilitated by the British Columbia Ministry of Health.
- (III) The Statistics Canada database: BC and HIV-positive population counts were acquired through the statistics Canada website to calculate HIV-specific mortality rates for Indicator 13. Hiv-Related Mortality.

Membership of the STOP HIV/AIDS Technical Monitoring Committee–BC-CfE

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The Seek and Treat for Optimal Prevention (STOP) HIV/AIDS BC Provincial Program: A Note on Monitoring and Interpreting HIV Indicators

The Seek and Treat for Optimal Prevention (STOP) of HIV/AIDS programme is a provincial initiative to improve HIV diagnosis and care delivery in BC through increased HIV-specific funding to all Health Service Delivery Areas (HSDA's) across BC. The STOP provincial programme is an expansion of a four-year STOP pilot project which was implemented in two Health Service Delivery Areas in March 2010; the Vancouver HSDA which bears the largest burden of the HIV epidemic in the province and the Northern Interior HSDA which bears a high burden of HIV-related mortality. The STOP pilot project demonstrated the urgent need for improved efforts in early diagnosis of HIV and timely initiation of antiretroviral therapy (ART) initiation.

The expansion to a province-wide programme was announced on November 30th, 2013 by the BC Ministry of Health with roll out of funding beginning on April 1st, 2013. This funding is intended to be used in the implementation and evaluation of HIV-related diagnosis and care initiatives within individual HA's. Goals of the project include: 1. A reduction in the number of new HIV infections in BC; 2. Improvements in the quality, effectiveness, and reach of HIV prevention services; 3. An increase in early diagnosis of HIV; 4. A reduction in AIDS cases and HIV-related mortality.

The goals of HA-led STOP-funded initiatives are to work toward achieving these goals. To these ends some outcome measures or indicators of progress have been drafted that should be considered in the design and implementation phases of these initiatives.

HIV Testing Episodes and Rates

In this section, the number of HIV test episodes and point of care (POC) HIV tests conducted each quarter in BC is shown. In general terms the goal is to increase the number of tests performed and to maximize testing efficiency. Test episodes are allocated by region according to where the test is performed.

Indicator 1. HIV Testing Episodes

Figure 1.1 HIV Test Episodes for Vancouver Coastal Health

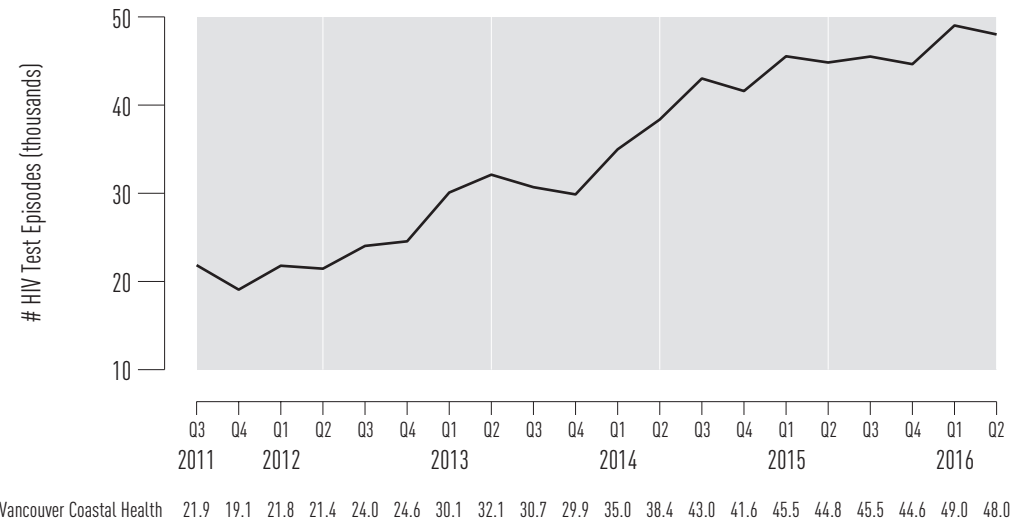


Figure 1.2 HIV Test Episodes by Gender for Vancouver Coastal Health ^{1,2}

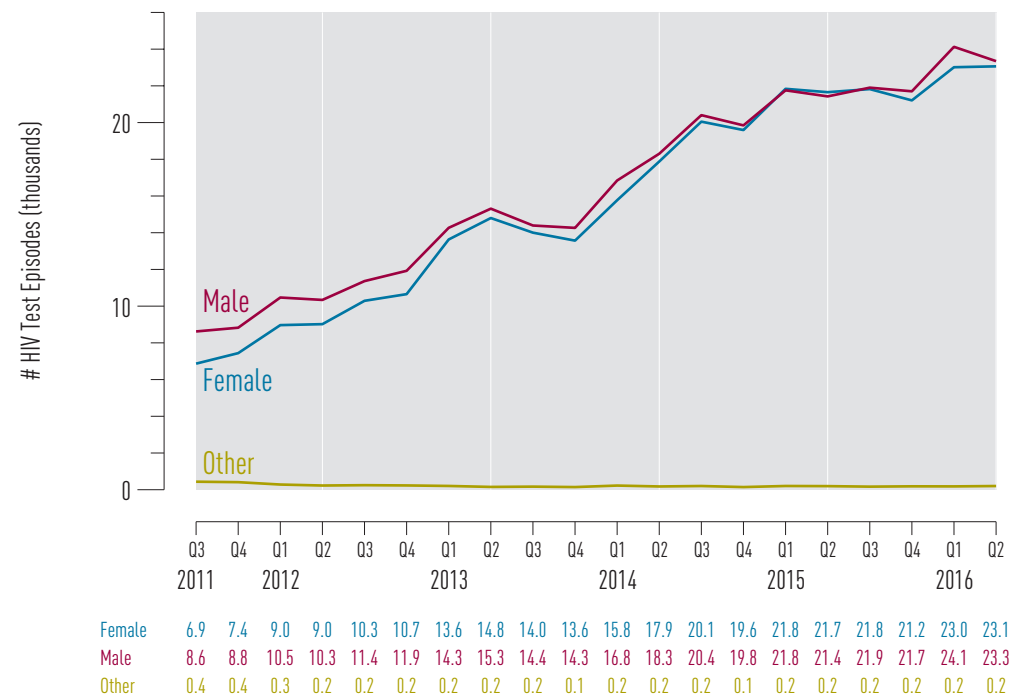


Figure 1.3 HIV Test Episodes by Age Category for Vancouver Coastal Health ^{1,2}

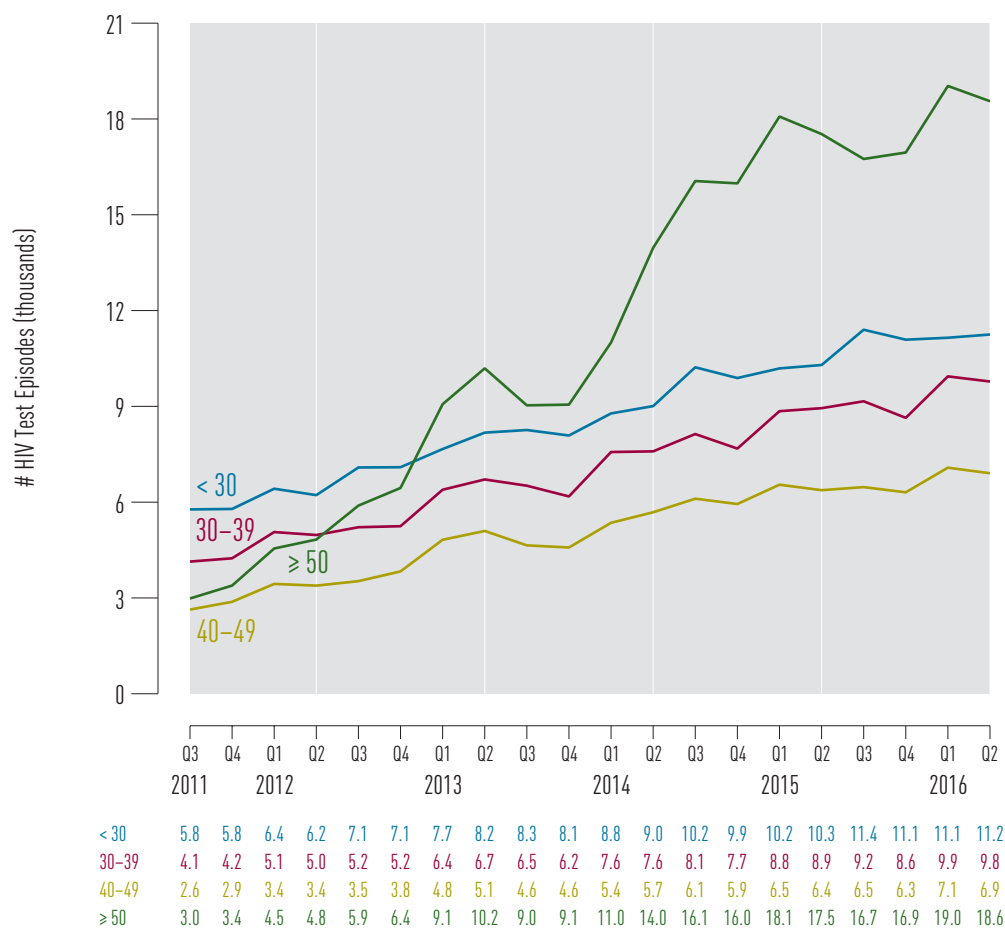
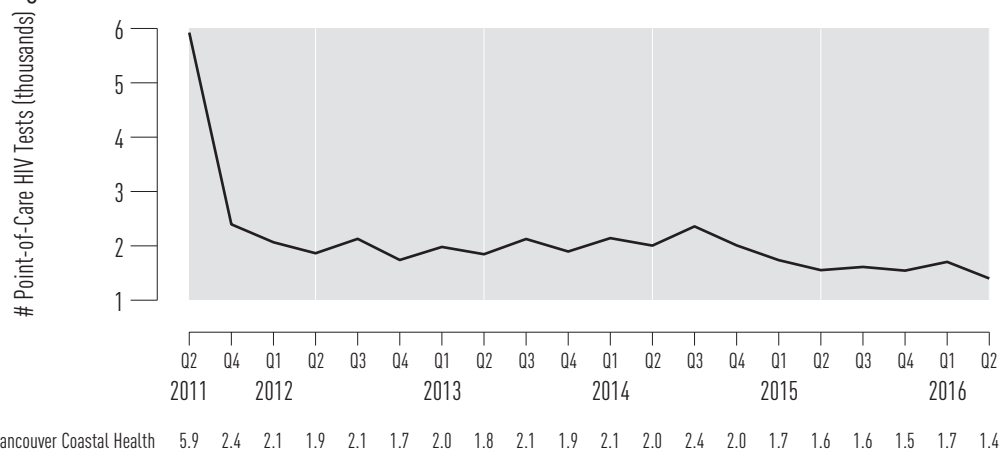


Figure 1.4 Point-of-Care HIV Tests for Vancouver Coastal Health



1 Data Source: The BC Public Health Microbiology and Reference Laboratory (BCPHMRL) courtesy of the BC Centre for Disease Control (BCCDC).

Limitation: Repeat tests in individuals who test using various identifiers may not be identified and these individuals may be counted more than once.

2 Testing does not include point of care tests.

Figure 1.5 HIV Test Episodes for Vancouver Coastal Health by HSDA ¹

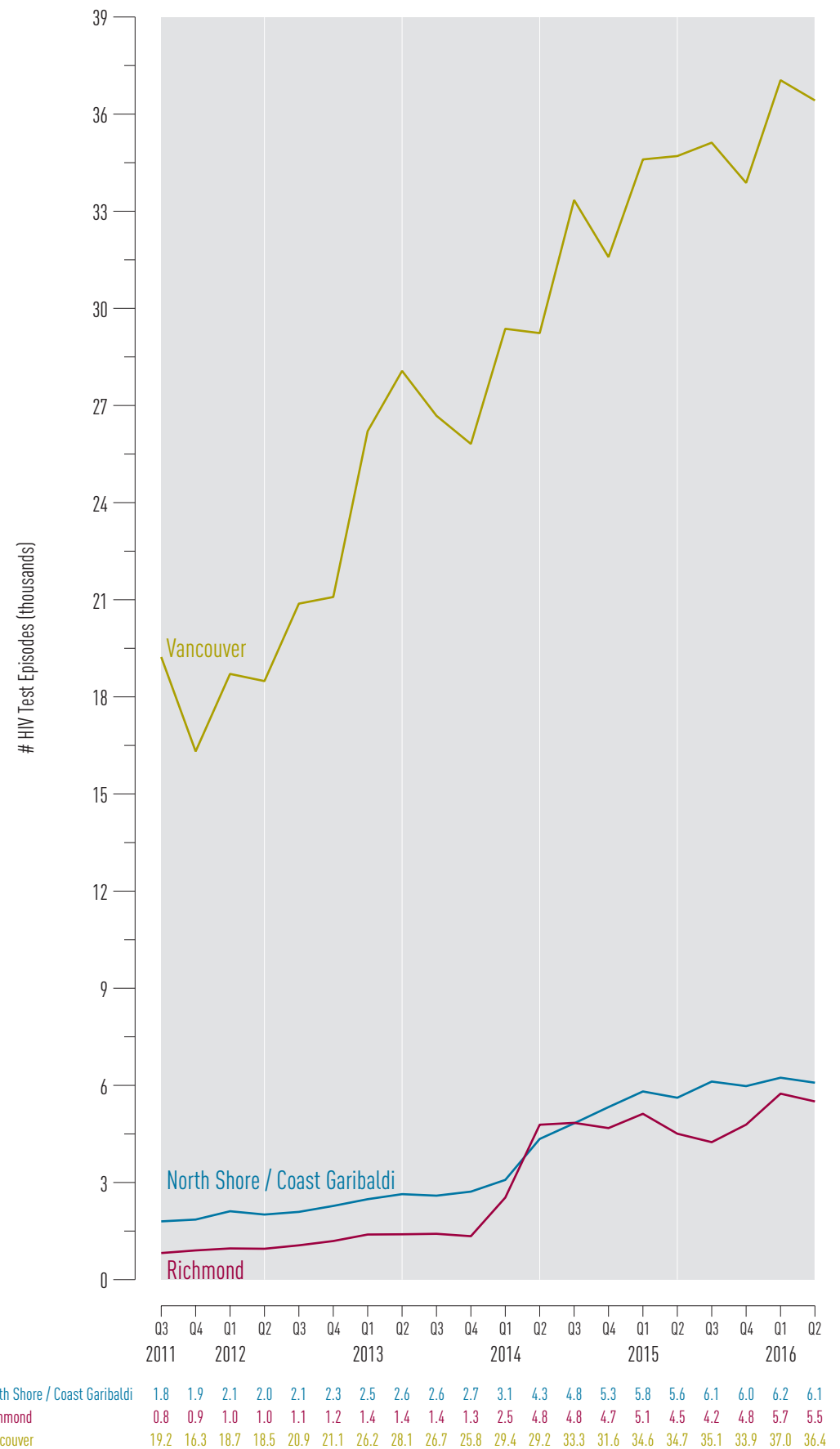


Figure 1.6 HIV Test Episodes for Non-prenatal Females in Vancouver Coastal Health by HSDA ^{1,2}

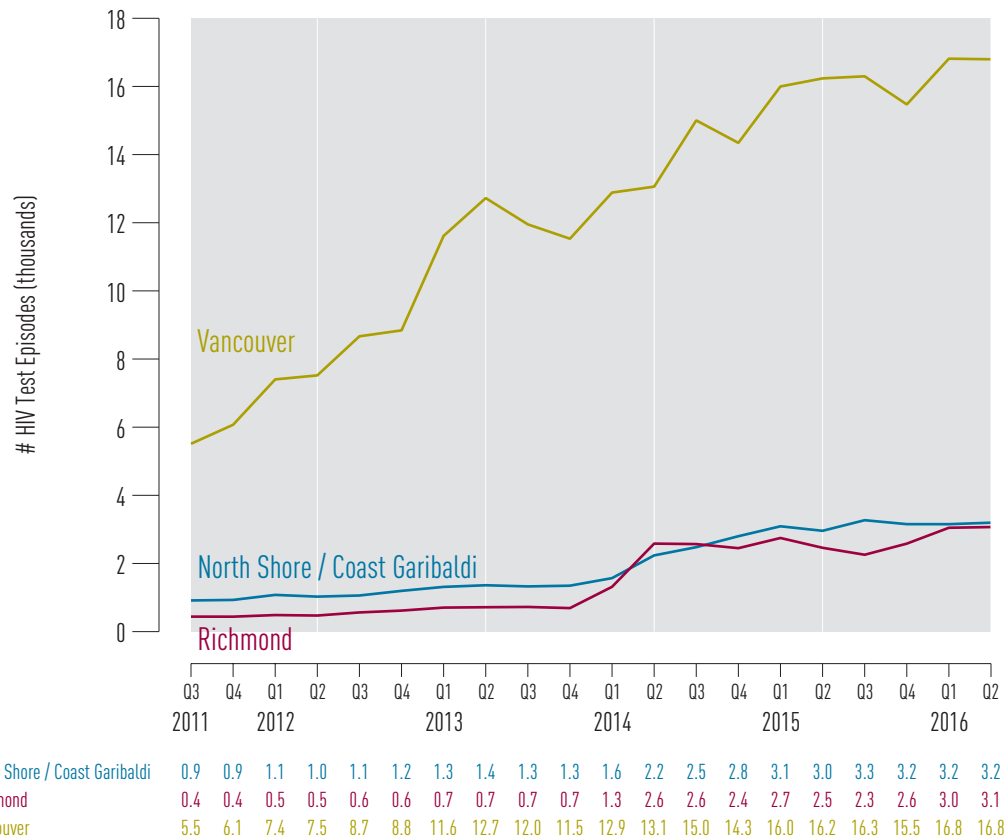
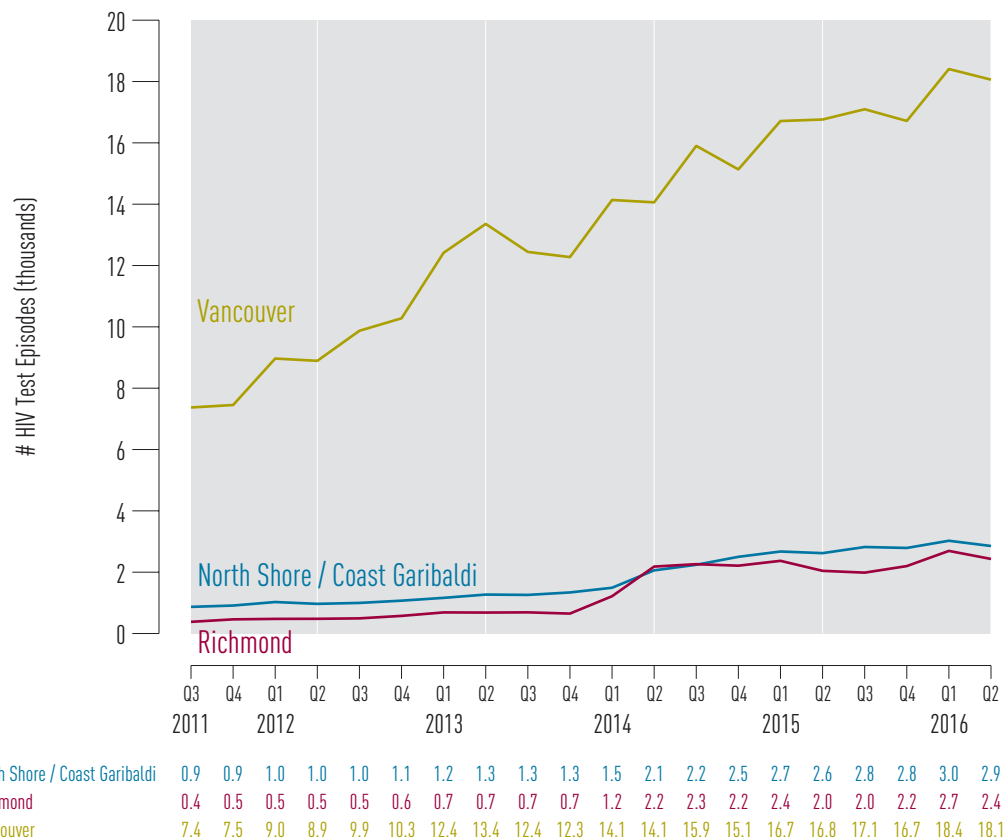


Figure 1.7 HIV Test Episodes for Males in Vancouver Coastal Health by HSDA ^{1,2}



Indicator 2. HIV Testing Rates

Figure 2.1 Rate of HIV Testing for Vancouver Coastal Health and HSDAs ²

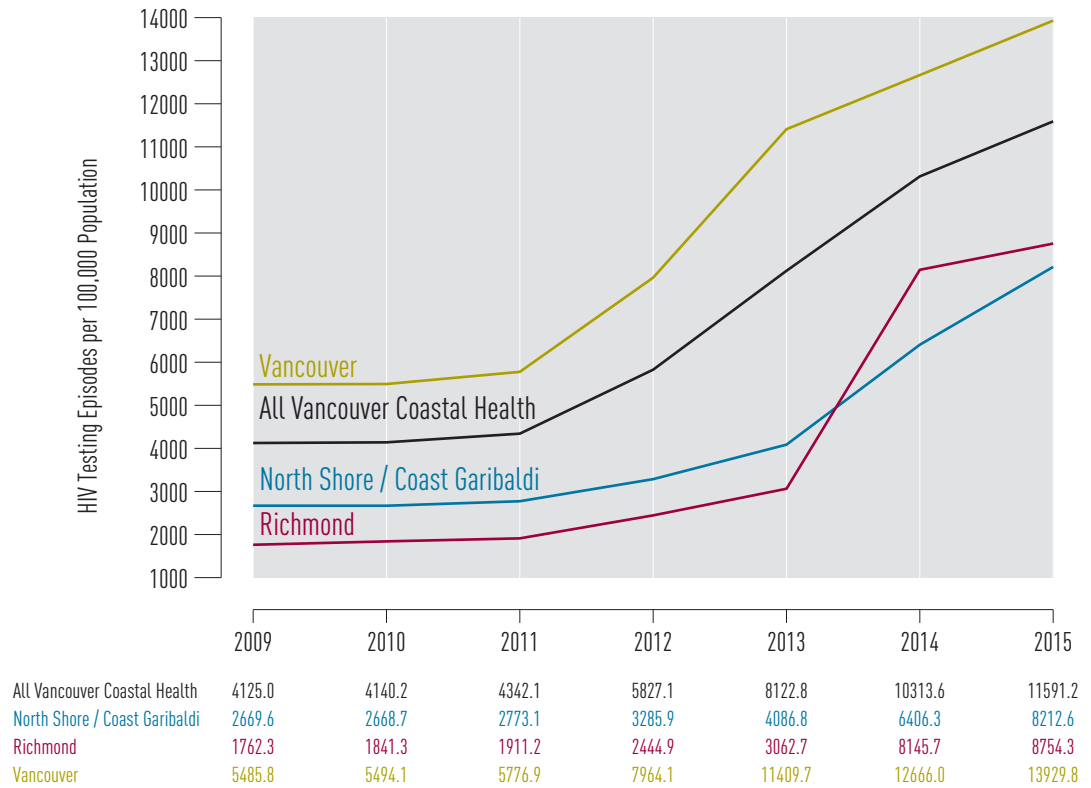


Figure 2.2 Rate of HIV Testing by Gender for Vancouver Coastal Health ²

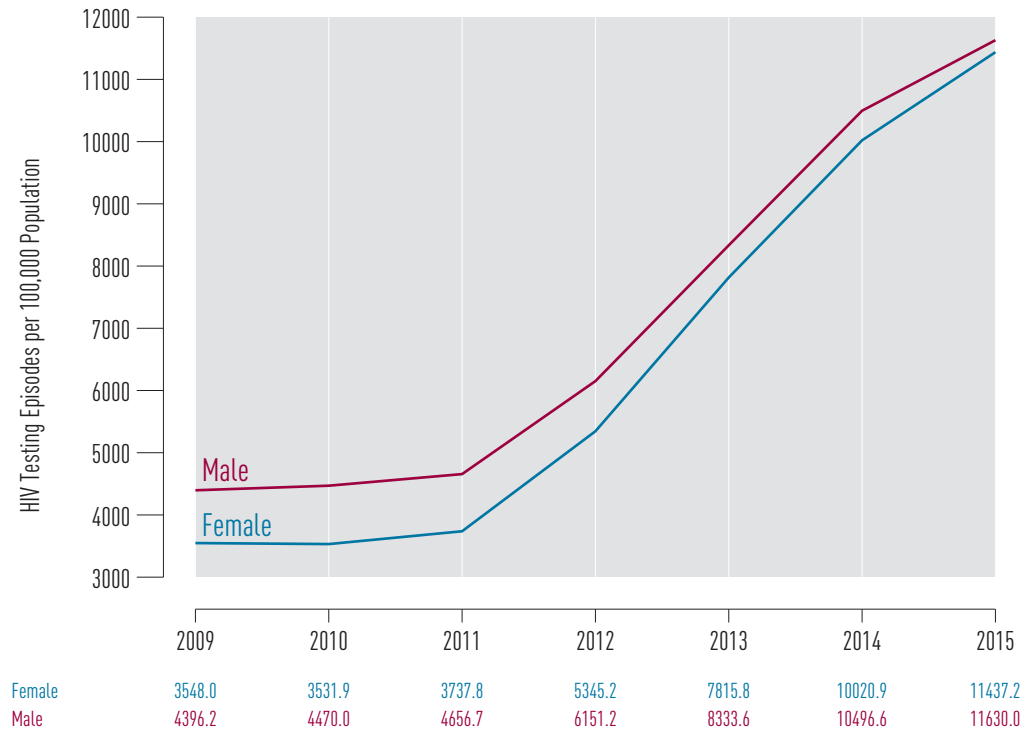
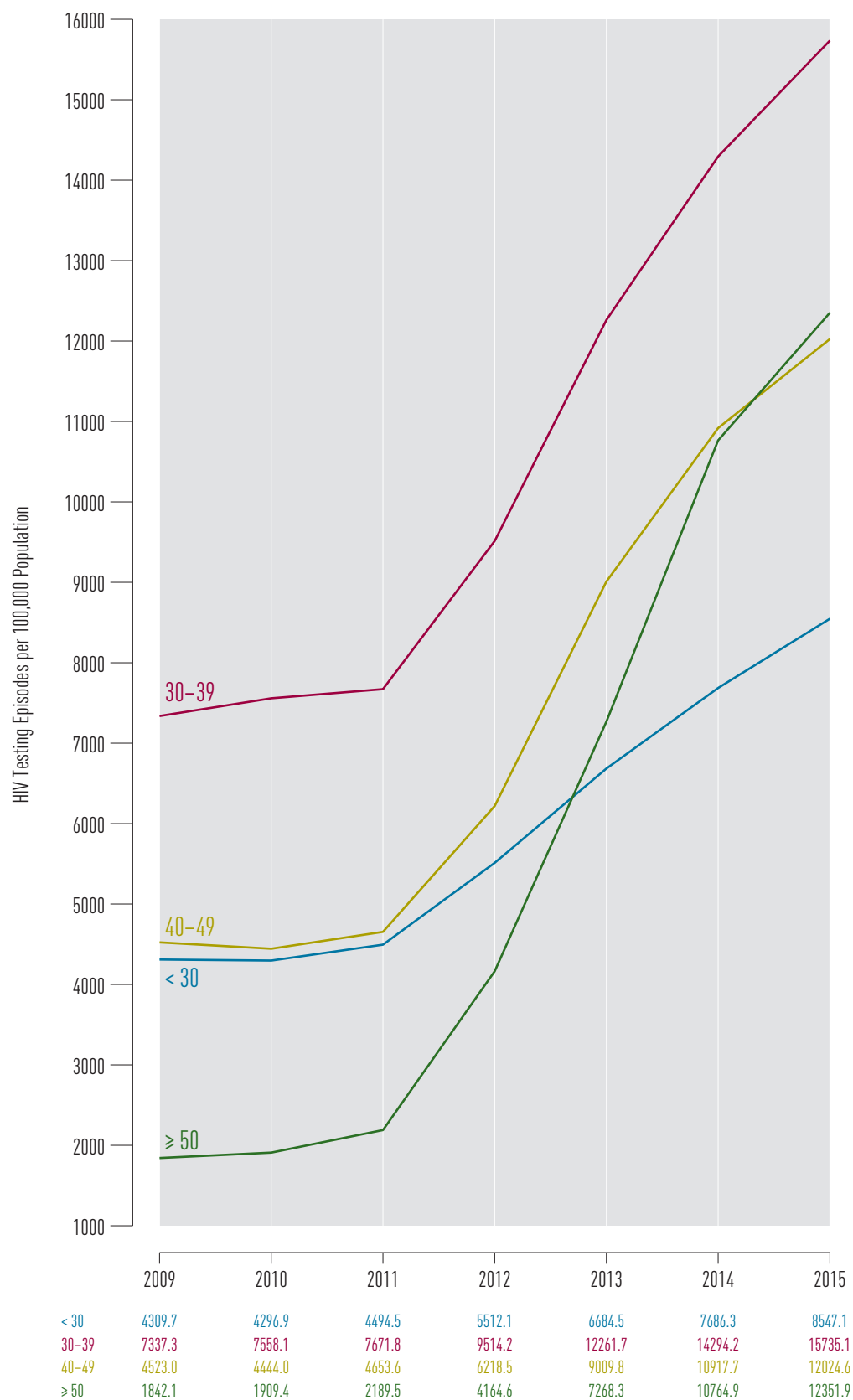


Figure 2.3 Rate of HIV Testing by Age Category for Vancouver Coastal Health ²



² Testing does not include point of care tests.

New HIV Diagnoses

Trends in HIV diagnoses by gender and exposure category are described. Interpreting HIV diagnoses must be done with consideration that trends are influenced by both changes in testing rate as well as changes in transmission rates. It is important to note that new HIV diagnoses cases and rates are not synonymous with HIV incidence as a person may have become infected with HIV long before they tested positive for HIV. However, as there is no reliable method for measuring HIV incidence we follow trends in HIV diagnoses.

Indicator 3. New HIV Diagnoses

Figure 3.1 New HIV Diagnoses for Vancouver Coastal Health ³

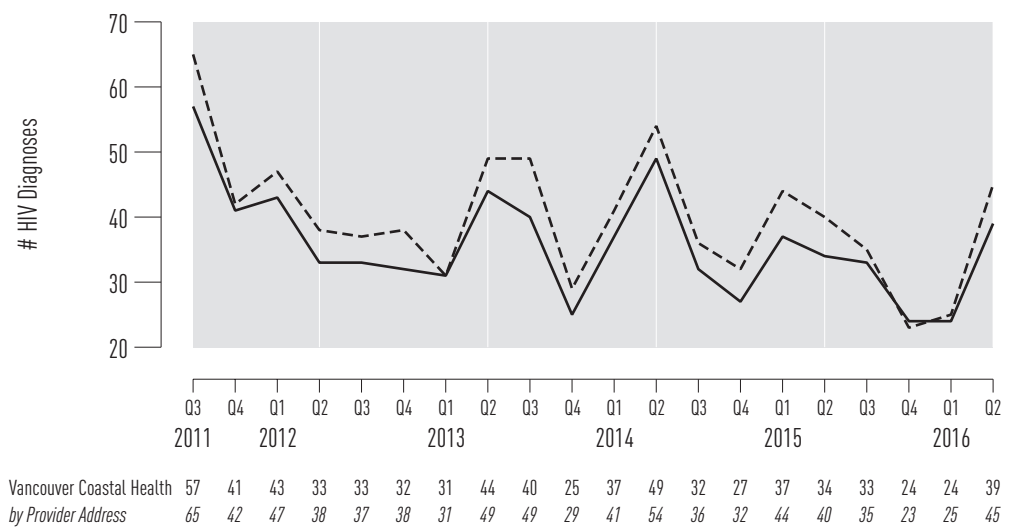
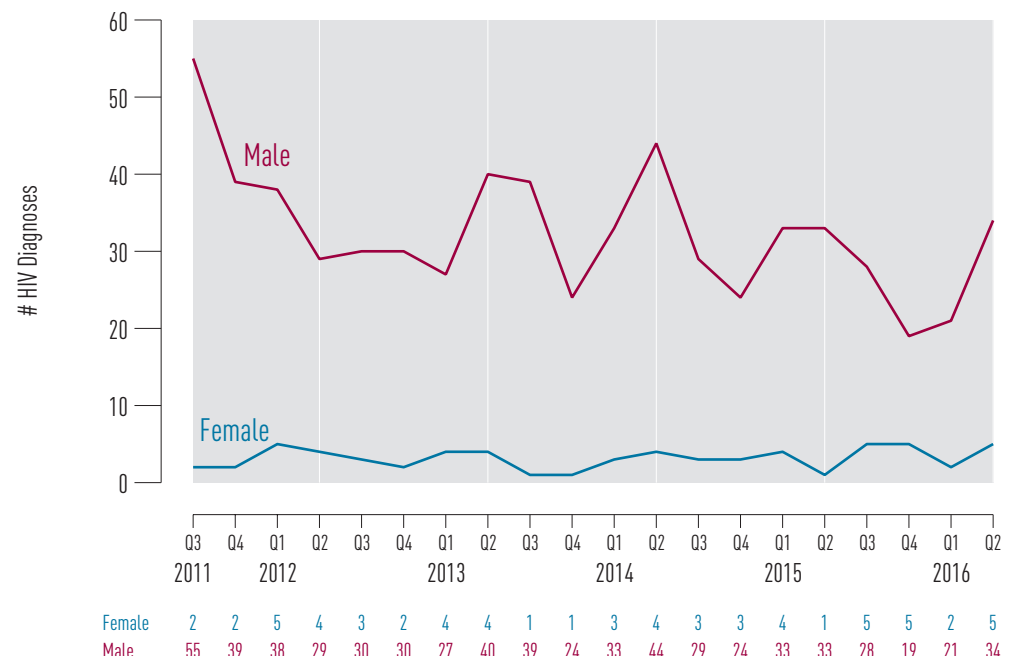


Figure 3.2 New HIV Diagnoses for Vancouver Coastal Health by Gender ³



³ Data Source: BCCDC. When present, "By Provider Address" is graphed as dashed line in same colour.

Figure 3.3 New HIV Diagnoses for Vancouver Coastal Health by Age Category ³

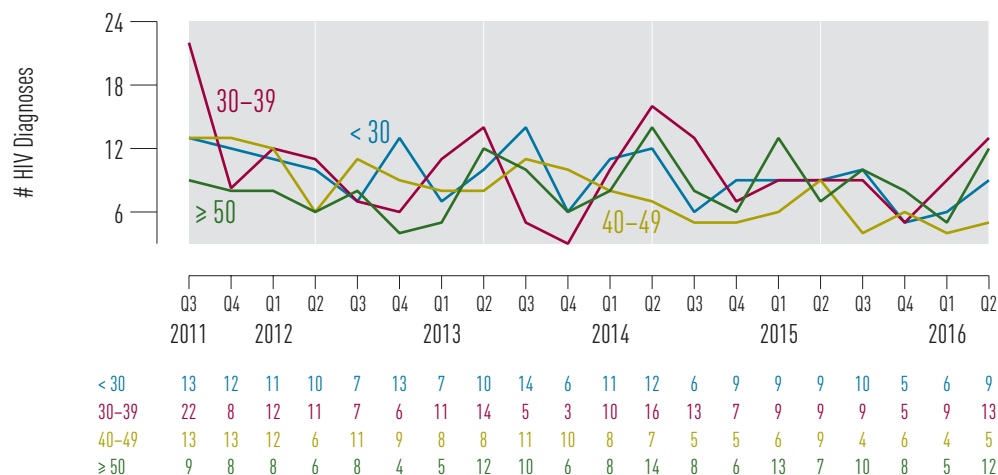
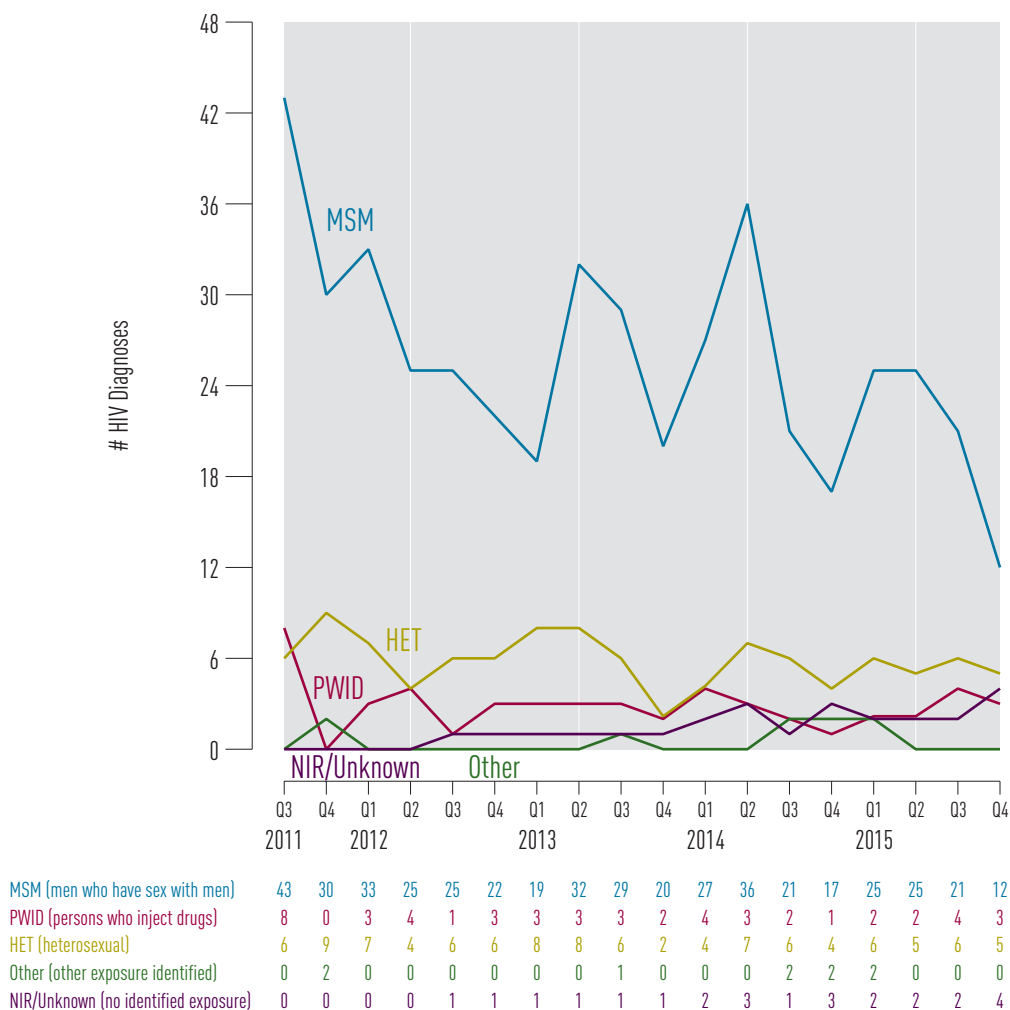


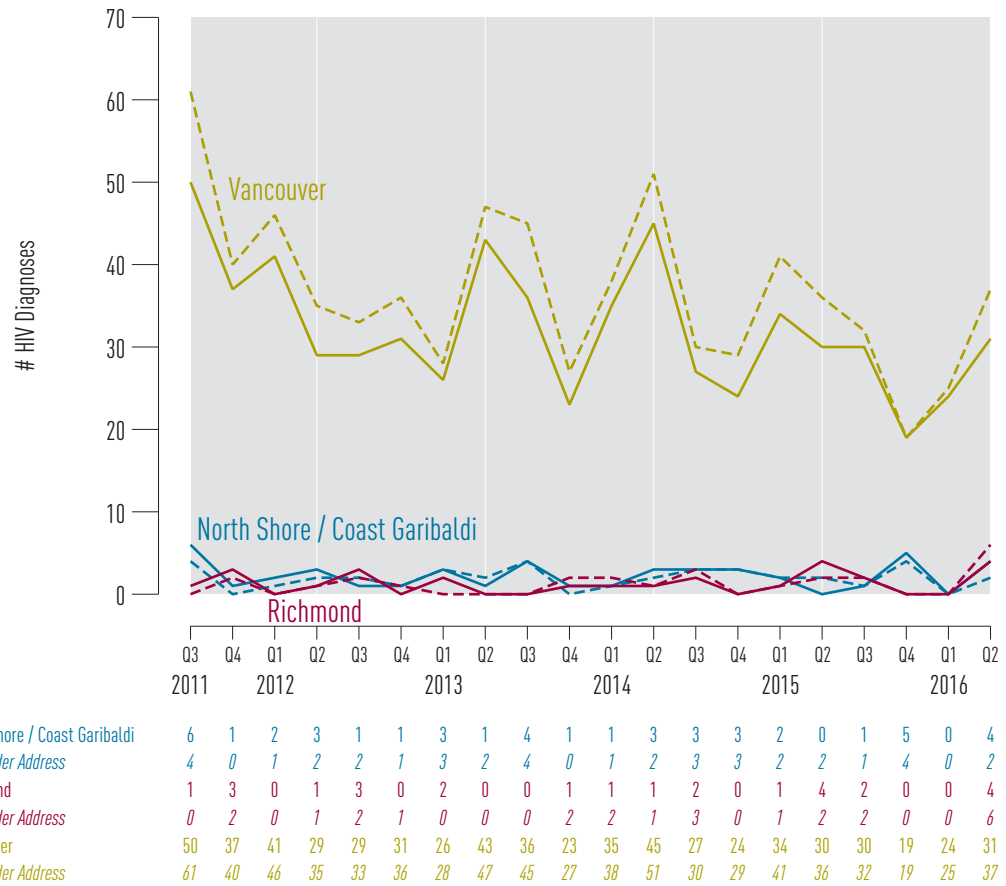
Figure 3.4 New HIV Diagnoses for Vancouver Coastal Health by Exposure Category ^{3,4}



³ Data Source: BCCDC. When present, “By Provider Address” is graphed as dashed line in same colour.

⁴ MSM=men who have sex with men; PWID= people who inject drugs; HET=heterosexual. NIR=No identified risk/exposure.

Figure 3.5 New HIV Diagnoses for Vancouver Coastal Health by HSDA ³



³ Data Source: BCCDC. When present, "By Provider Address" is graphed as dashed line in same colour.

Stage of HIV Infection at Diagnosis

Classification of stage of HIV infection, in the absence of information regarding recent testing history, is reliant on clinical information available at the time of diagnosis, including first CD4+ cell count and laboratory results suggestive of acute HIV infection (Table 1). The benefits of Treatment as Prevention (TasP) are maximized when antiretroviral therapy (ART) is initiated at high CD4 cell counts. Accordingly, it is preferable that individuals newly diagnosed with HIV be in the early stages of HIV infection (stage 0 or 1) to allow for early ART initiation.

N.B. Interpretation of Stage of HIV Infection at Diagnosis should proceed with caution. Early increases in diagnosis at late stage (i.e., low CD4 counts) may represent a “catching up” of previously missed long term infected individuals rather than a trend toward diagnosis at later stage of infection.

Indicator 4. Stage of HIV Infection at Diagnosis

Table 1 Staging Classifications of Infection at Time of HIV Diagnosis Based on CDC HIV Surveillance Case Definitions

Stage	Criteria	
0	Laboratory criteria met for acute HIV infection, or previous negative or indeterminate HIV test within 180 days of first confirmed positive HIV test.	
1	Stage 0 not met <i>and</i>	CD4 ≥500
2a		CD4 350–499
2b		CD4 200–349
3		CD4 <200
Unknown		No available CD4

Updated 2016 Q1: AIDS diagnosis date is no longer used in this indicator.

Figure 4.1 Stage of HIV Infection at Diagnosis for Vancouver Coastal Health, 2011–2015⁵

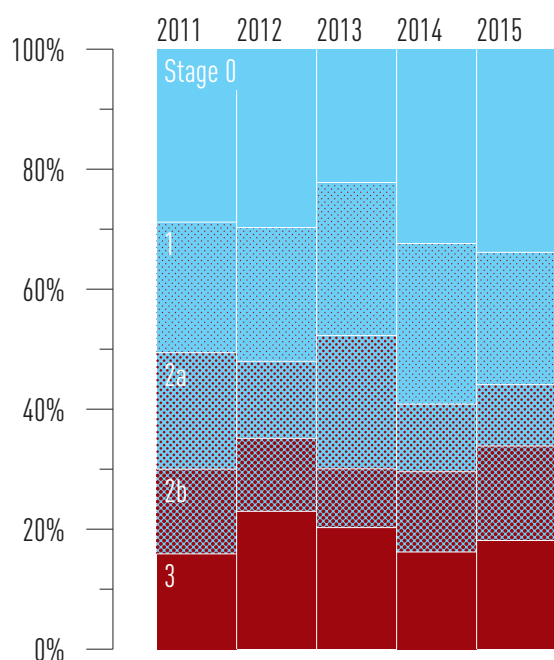
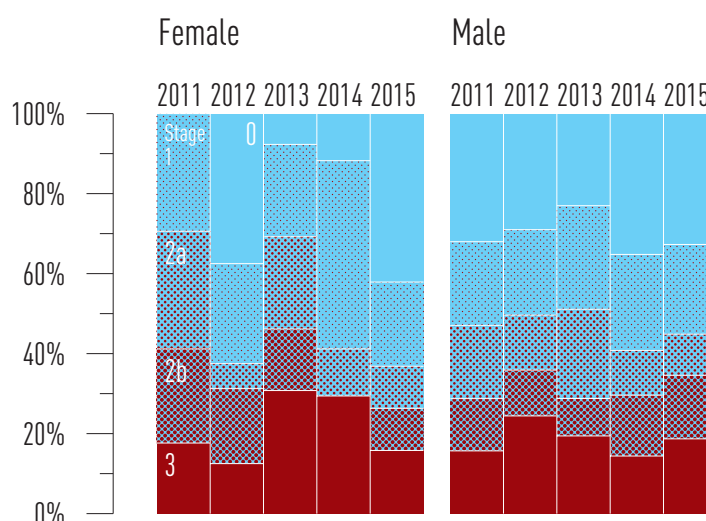


Figure 4.2 Stage of HIV Infection at Diagnosis by Gender for Vancouver Coastal Health, 2011–2015⁵



	Vancouver Coastal					Female					Male				
	2011	'12	'13	'14	'15	'11	'12	'13	'14	'15	'11	'12	'13	'14	'15
Stage 0	49	44	34	46	43	0	6	1	2	8	49	38	32	44	35
Stage 1	37	33	39	38	28	5	4	3	8	4	32	28	36	30	24
Stage 2a	33	19	34	16	13	5	1	3	2	2	28	18	31	14	11
Stage 2b	24	18	15	19	20	4	3	2	0	2	20	15	13	19	17
Stage 3	27	34	31	23	23	3	2	4	5	3	24	32	27	18	20
Unknown	17	9	4	16	12	0	1	0	1	0	16	8	4	15	12
Total (n=)	187	157	157	158	139	17	17	13	18	19	169	139	143	140	119

Figure 4.3 Stage of HIV Infection at Diagnosis by Age Category for Vancouver Coastal Health, 2011–2015 ⁵

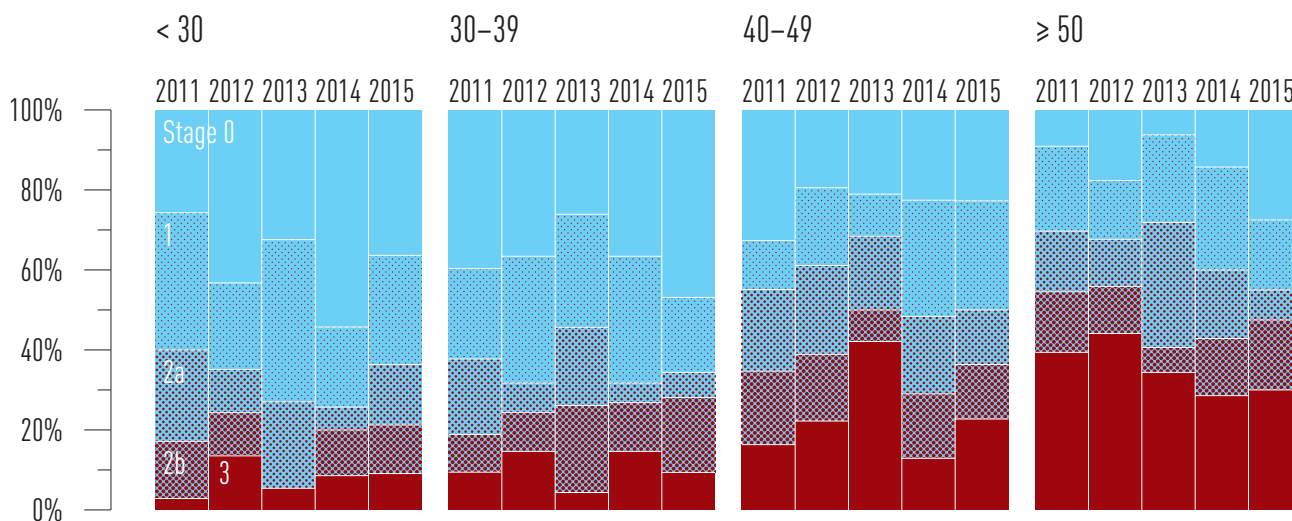
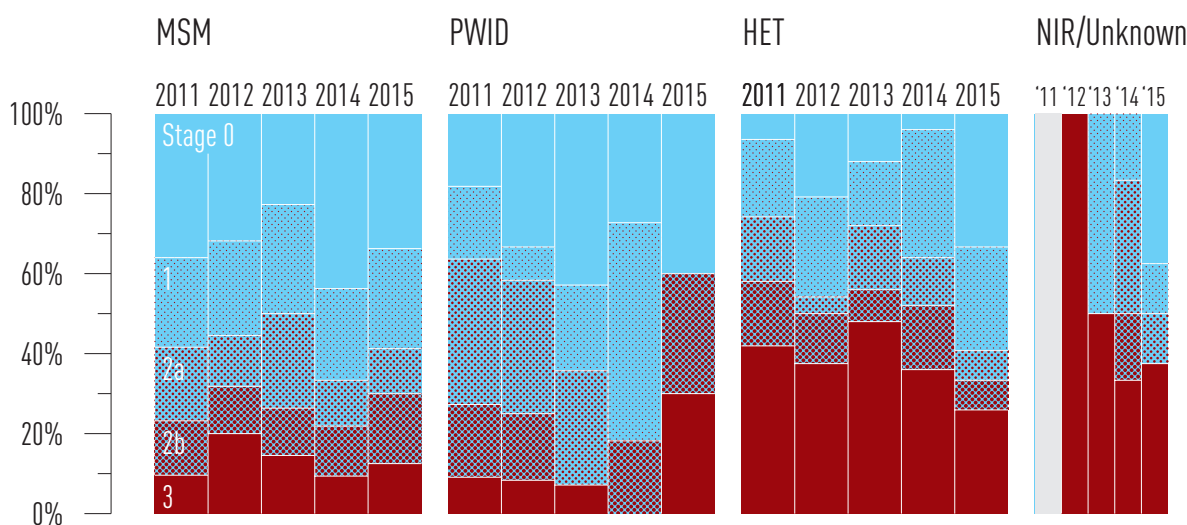


Figure 4.4 Stage of HIV Infection at Diagnosis by Exposure Category for Vancouver Coastal Health, 2011–2015 ^{5,6}



	< 30 years					30–39 years					40–49 years					≥ 50 years					MSM					PWID					Heterosexual					Other					NIR/Unknown					
	2011	12	13	14	15	11	12	13	14	15	11	12	13	14	15	11	12	13	14	15	11	12	13	14	15	11	12	13	14	15	11	12	13	14	15	11	12	13	14	15						
Stage 0	9	16	12	19	12	21	15	12	15	15	16	7	8	7	5	3	6	2	5	11	45	35	25	42	27	2	4	6	3	4	2	5	3	1	9	0	0	0	0	0	0	0	3			
Stage 1	12	8	15	7	9	12	13	13	13	6	6	7	4	9	6	7	5	7	9	7	28	26	30	22	20	2	1	3	6	0	6	6	4	8	7	1	0	0	1	0	0	0	2	1	1	
Stage 2a	8	4	8	2	5	10	3	9	2	2	10	8	7	6	3	5	4	10	6	3	23	14	26	11	9	4	4	4	0	0	5	1	4	3	2	1	0	0	0	0	1	0	0	0	2	1
Stage 2b	5	4	0	0	4	4	5	4	10	5	6	9	6	3	5	3	5	4	2	5	7	17	13	13	12	14	2	2	0	2	3	5	3	2	4	2	0	0	0	0	1	0	0	0	1	0
Stage 3	1	5	2	3	3	5	6	2	6	3	8	8	16	4	5	13	15	11	10	12	12	22	16	9	10	1	1	1	0	3	13	9	12	9	7	1	0	0	3	0	0	2	2	3		
Unknown	4	5	0	3	1	7	2	1	7	3	2	0	0	2	4	4	2	3	4	4	13	7	3	12	7	2	0	0	0	0	1	1	0	1	1	1	0	1	0	0	0	1	0	3	4	
Total (n=)	39	42	37	38	34	60	43	47	48	35	51	36	38	33	26	37	36	35	39	44	381	117	113	108	87	13	12	14	11	10	32	25	25	26	28	4	0	1	4	2	0	3	4	9	12	

⁵ Data Source: BCCDC

⁶ MSM=men who have sex with men; PWID=people who inject drugs; HET=heterosexual. NIR=No identified risk/exposure.

HIV Cascade of Care

Indicator 5. HIV Cascade of Care

The success of seek, test, treat and retain (STTR) strategies like STOP is reliant on early diagnosis of HIV, linking newly diagnosed HIV-positive persons with ongoing care, retaining persons in HIV-care; initiating ART based on best evidenced practices and maintaining optimal ART adherence to ensure a suppressed viral load. These stages of HIV-care can be summarized as: 1. HIV diagnosis, 2. Linked to HIV care, 3. Retained in HIV care, 4. On ART, 5. Adherent to ART and 6. Achieving a suppressed VL; collectively, they are referred to as the cascade of care. Attrition between any of these stages of HIV-care means a reduction in the potential of ART as a benefit to the HIV-positive individual and as an HIV transmission prevention method on a population level. Thus, when interpreting trends in the cascade of care, we strive to see increases along each step of the cascade of care (i.e. reduced attrition) with the ultimate goal being 100% within each stage of the cascade. Monitoring the Cascade of Care provides a picture as to where deficiencies lie in the delivery and uptake of HIV-care. In this section we present the cascade of care for the period 2015 Q3–2016 Q2 in Vancouver Coastal Health and stratified by sex and age.

Figure 5.1 Estimated Cascade of Care for Vancouver Coastal Health, Year Ending 2016 Q2 ⁷
n=4768

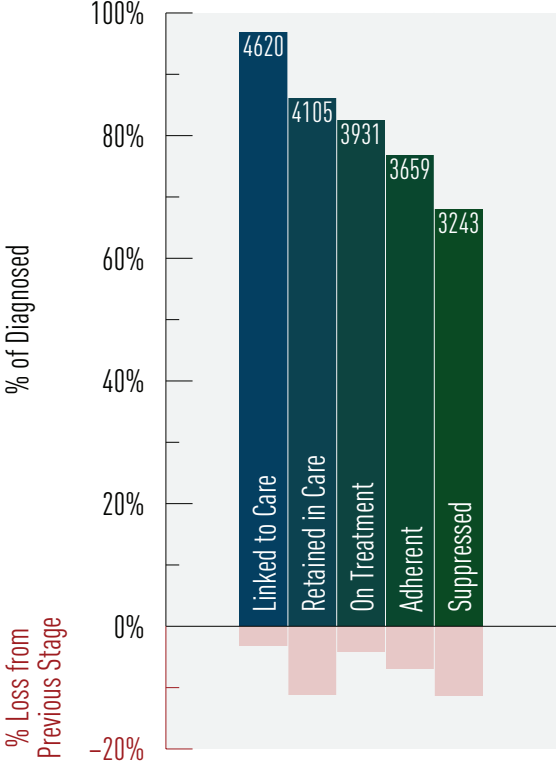
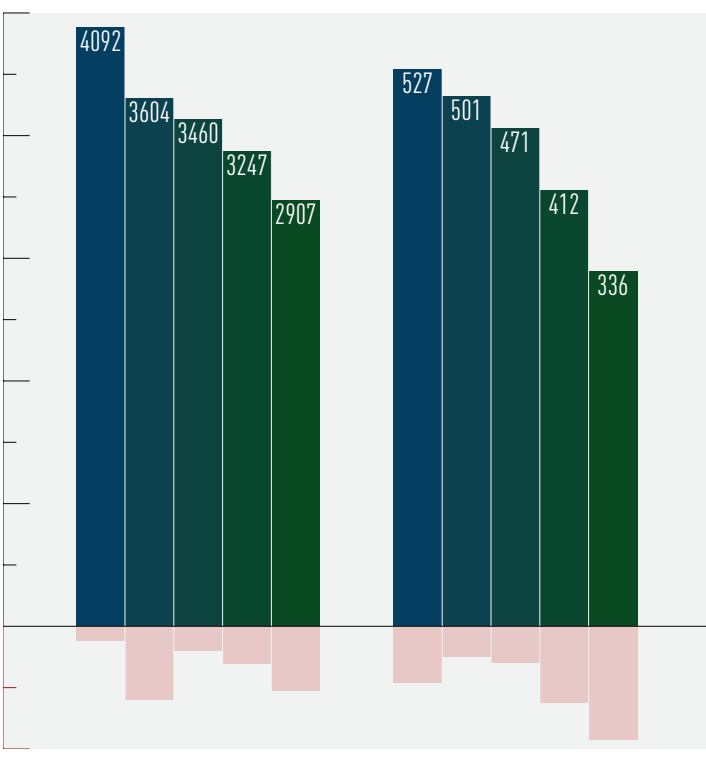


Figure 5.2 Estimated Cascade of Care for Vancouver Coastal Health by Gender, Year Ending 2016 Q2 ⁷
Men n=4188, Women n=580



⁷ Data is for the period 2015 Q3–2016 Q2.

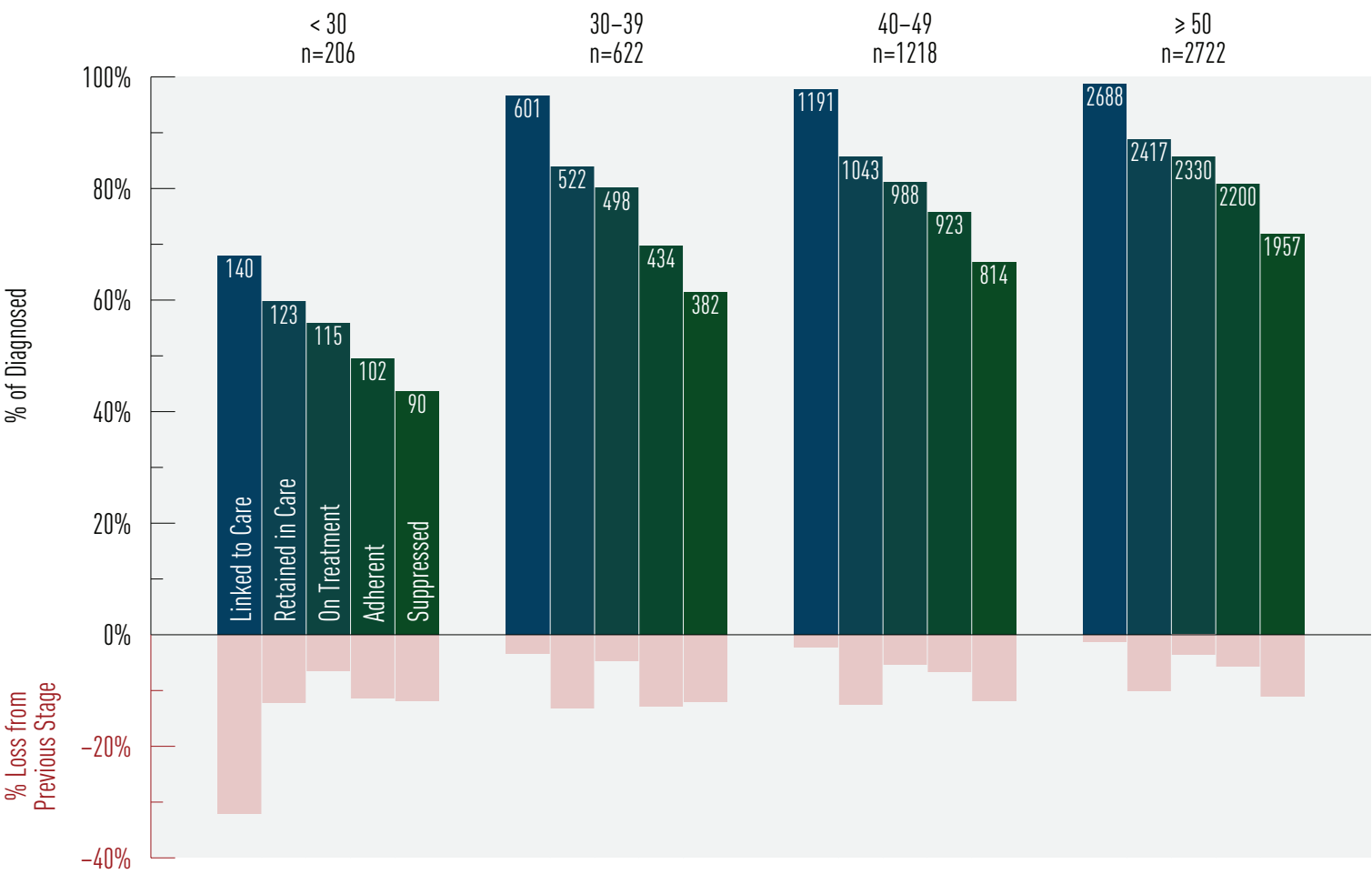
Data Sources:

- i British Columbia Centre for Excellence Drug Treatment Program (DTP) Database (ARV use, VL and CD4 count).
- ii Administrative data (ex. MSP billings; hospitalization data from the Discharge Abstract Database (DAD)).

Limitations: HA assignment is based on the most recent HA of residence of the patient, if not available of the HIV-care provider. If the most recent HA of residence is not updated then the designated HA may be incorrect.

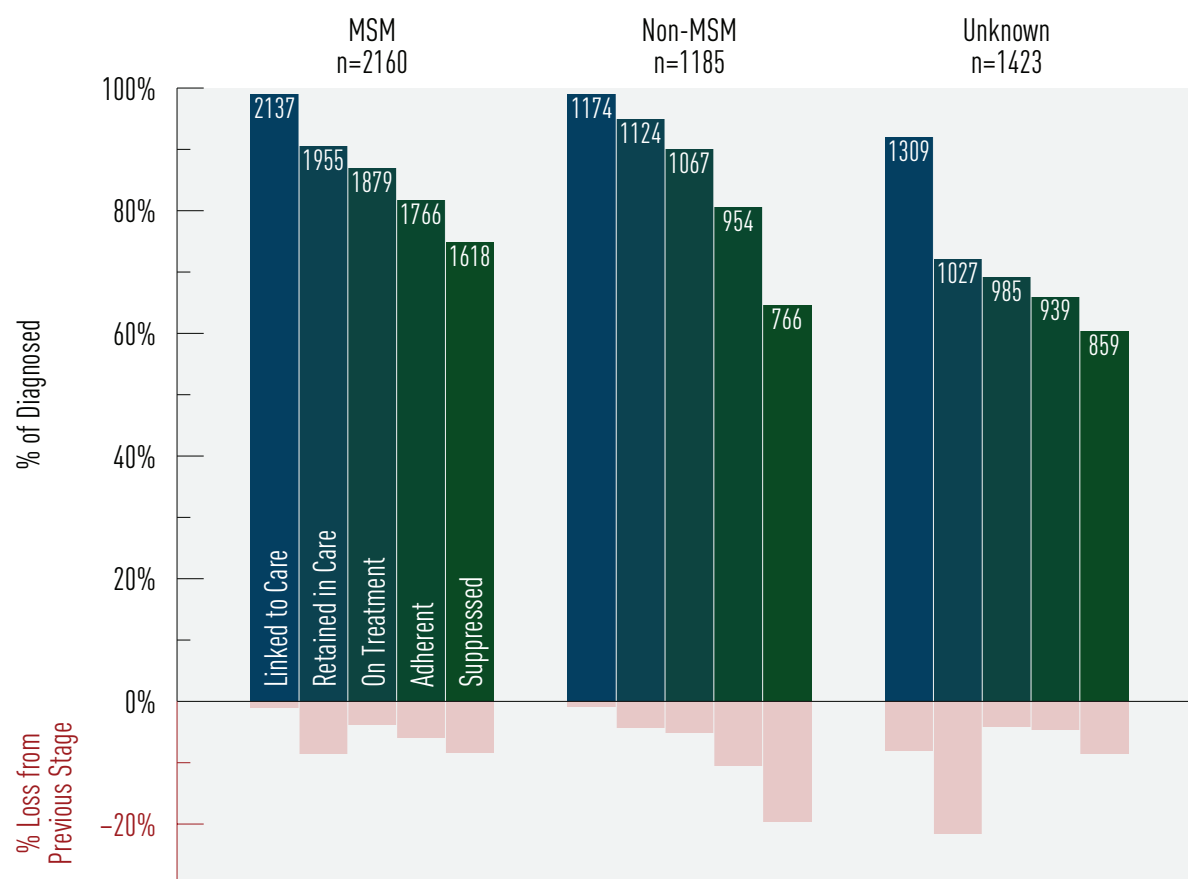
NB: Transgender have been assigned to their biological sex.

Figure 5.3 Estimated Cascade of Care for Vancouver Coastal Health by Age Category, Year Ending 2016 Q2 ⁸



⁸ Data is for the period 2015 Q3–2016 Q2.
Data Sources:
i British Columbia Centre for Excellence Drug Treatment Program (DTP) Database (ARV use, VL and CD4 count).
ii Administrative data (ex. MSP billings; hospitalization data from the Discharge Abstract Database (DAD)).
Limitations: HA assignment is based on the most recent HA of residence of the patient, if not available of the HIV-care provider.
If the most recent HA of residence is not updated then the designated HA may be incorrect.

Figure 5.4 Estimated Cascade of Care for Vancouver Coastal Health by MSM Status, Year Ending 2016 Q2 ⁹



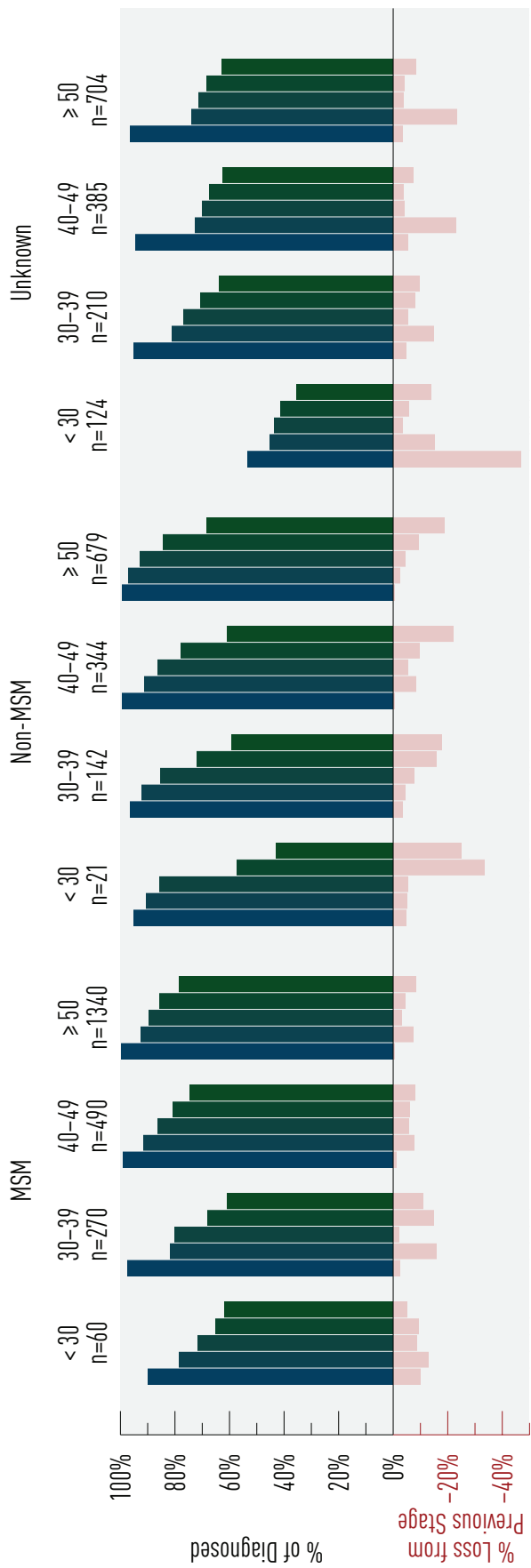
⁹ Data is for the period 2015 Q3–2016 Q2.

Data Sources:

- i British Columbia Centre for Excellence Drug Treatment Program (DTP) Database (ARV use, VL and CD4 count).
- ii Administrative data (ex. MSP billings; hospitalization data from the Discharge Abstract Database (DAD)).

Limitations: HA assignment is based on the most recent HA of residence of the patient, if not available of the HIV-care provider. If the most recent HA of residence is not updated then the designated HA may be incorrect.

Figure 5.5 Estimated Cascade of Care for Vancouver Coastal Health by Age Category and MSM Status, Year Ending 2016 Q2 ⁹

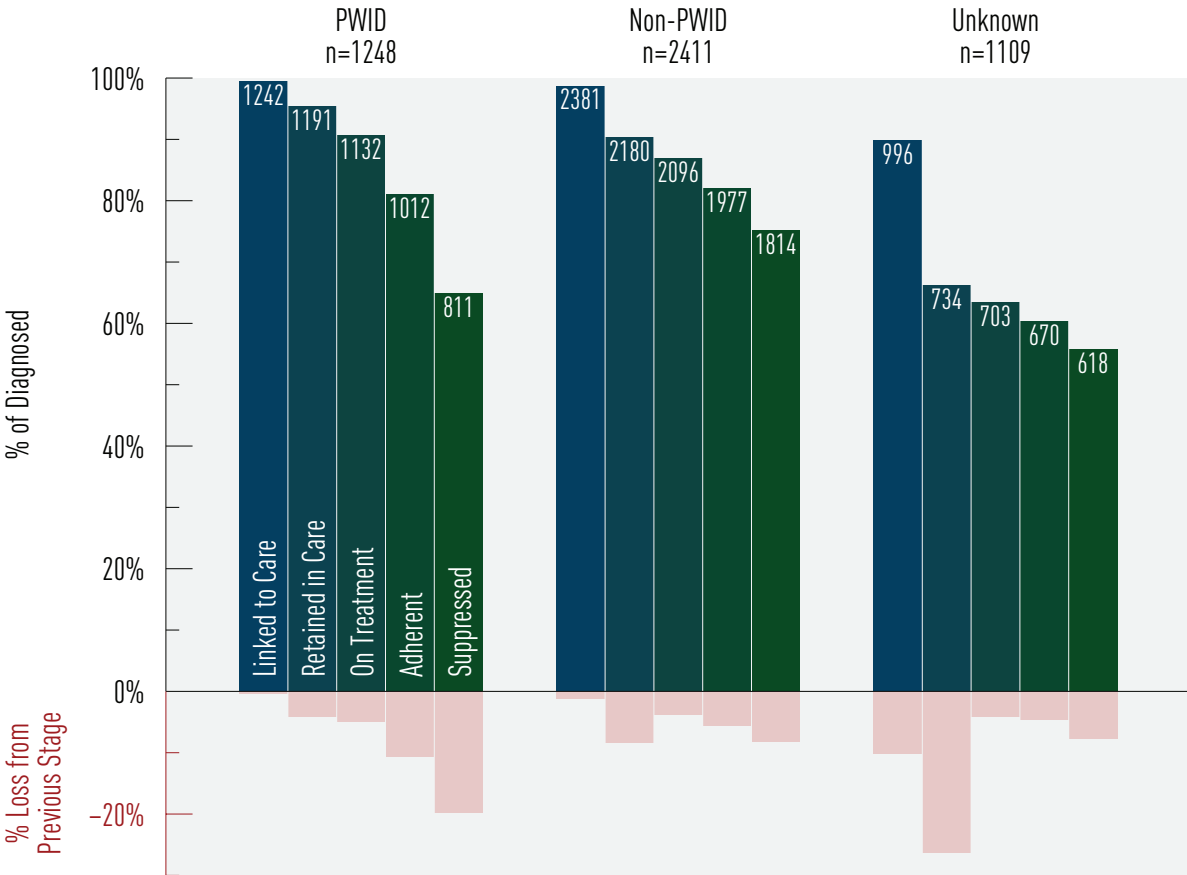


⁹ Data is for the period 2015 Q3–2016 Q2.

Data Sources:

- i British Columbia Centre for Excellence Drug Treatment Program (DTP) Database (ARV use, VL and CD4 count).
 - ii Administrative data (ex. MSP billings; hospitalization data from the Discharge Abstract Database (DAD)).
- Limitations: HA assignment is based on the most recent HA of residence of the patient, if not available of the HIV-care provider. If the most recent HA of residence is not updated then the designated HA may be incorrect.

Figure 5.6 Estimated Cascade of Care for Vancouver Coastal Health by History of IDU, Year Ending 2016 Q2 ⁹



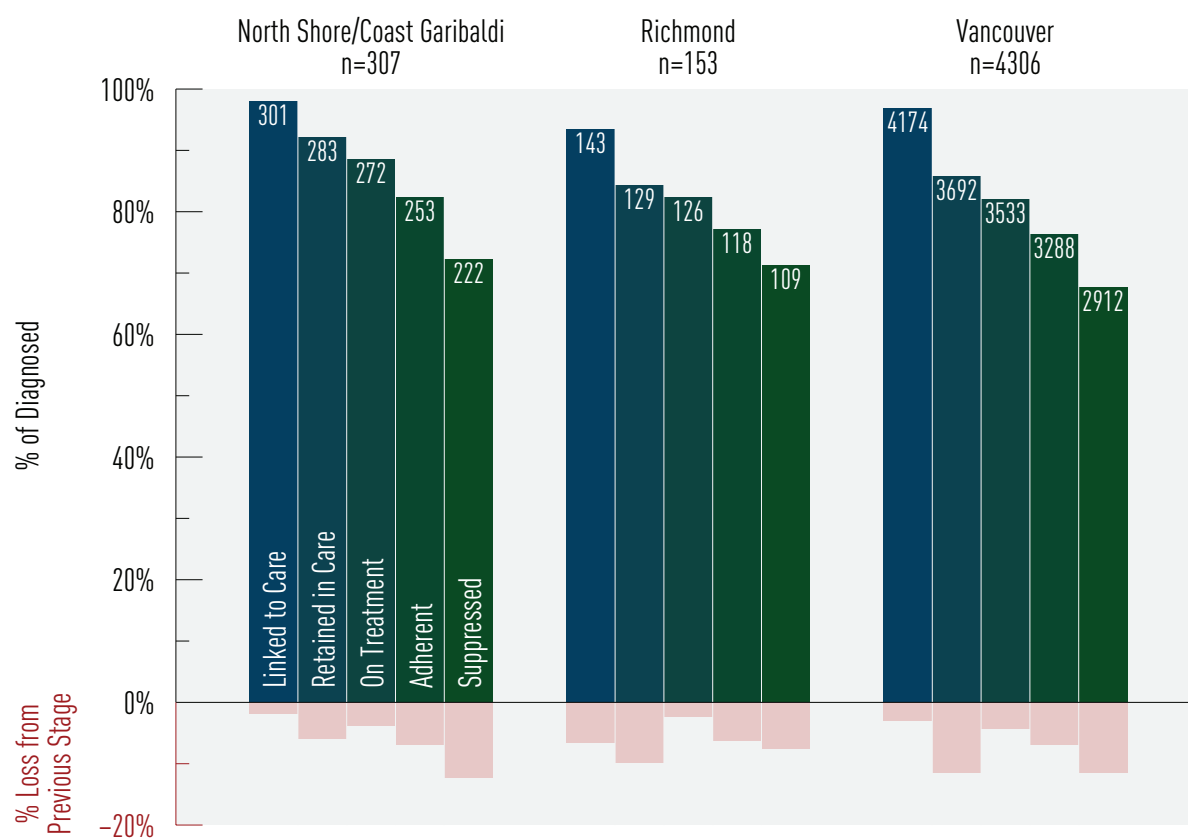
⁹ Data is for the period 2015 Q3–2016 Q2.

Data Sources:

- i British Columbia Centre for Excellence Drug Treatment Program (DTP) Database (ARV use, VL and CD4 count).
- ii Administrative data (ex. MSP billings; hospitalization data from the Discharge Abstract Database (DAD)).

Limitations: HA assignment is based on the most recent HA of residence of the patient, if not available of the HIV-care provider. If the most recent HA of residence is not updated then the designated HA may be incorrect.

Figure 5.7 Estimated Cascade of Care for Vancouver Coastal Health by HSDA, Year Ending 2016 Q2 ⁹



⁹ Data is for the period 2015 Q3–2016 Q2.

Data Sources:

- i British Columbia Centre for Excellence Drug Treatment Program (DTP) Database (ARV use, VL and CD4 count).
- ii Administrative data (ex. MSP billings; hospitalization data from the Discharge Abstract Database (DAD)).

Limitations: HA assignment is based on the most recent HA of residence of the patient, if not available of the HIV-care provider. If the most recent HA of residence is not updated then the designated HA may be incorrect.

Programmatic Compliance Score

Indicator 6. Programmatic Compliance Score (PCS)

The Programmatic Compliance Score (PCS) is a summary measure of risk of future death, immunologic failure and virologic failure from all causes for people who are starting ART for the first time. It is composed of patient- and physician-driven effects. PCS scores range from 0–6 with higher scores indicative of poorer health outcomes and greater risk of death. Table 2 provides mortality, immunologic failure and virologic failure probabilities for given PCS scores. We interpret an individual with a $PCS \geq 4$ as being 22 times more likely to die, almost 10 times more likely to have immunologic failure and nearly 4 times as likely to demonstrate virologic failure compared to those individuals with a PCS score of 0. A detailed description of how the PCS score is calculated and its validation can be found in the technical report. In short, PCS scores are calculated by summing the results (yes=1, no=0) of six un-weighted non-performance indicators based on IAS–USA treatment guidelines:

1. having <3 CD4 cell count tests in the first year after starting antiretroviral therapy (ART);
2. having <3 plasma viral load (VL) tests in the first year after starting ART;
3. not having drug resistance testing done prior to starting ART;
4. starting on a non-recommended ART regimen;
5. starting therapy with $CD4 < 200$ cells/ μ L; and
6. not achieving viral suppression within 9 months since ART initiation.

In this section we provide PCS scores and their components over time for the province of BC. A decline to 0%, (**i.e., all individuals having a score of 0**) is the eventual goal.

Table 2. Probability of Mortality, Immunologic Failure and Virologic Failure based on the Programmatic Compliance Score

Programmatic Compliance Score	Mortality Risk Ratio (95% Confidence Interval)	Immunologic Failure Risk Ratio (95% CI)	Virologic Failure Risk Ratio (95% CI)
0 (Best score)	1 (–)	1 (–)	1 (–)
1	3.81 (1.73–8.42)	1.39 (1.04–1.85)	1.32 (1.05–1.67)
2	7.97 (3.70–17.18)	2.17 (1.54–3.04)	1.86 (1.46–2.38)
3	11.51 (5.28–25.08)	2.93 (1.89–4.54)	2.98 (2.16–4.11)
4 or more (Worst score)	22.37 (10.46–47.84)	9.71 (5.72–16.47)	3.80 (2.52–5.73)

Reference: Lima VD, Le A, Nosyk B, Barrios R, Yip B, et al. (2012) Development and Validation of a Composite Programmatic Assessment Tool for HIV Therapy. PLoS ONE 7(11): e47859. doi:10.1371/journal.pone.0047859

Figure 6.1 PCS Components for Vancouver Coastal Health, 2014 Q3–2016 Q2 ¹⁰

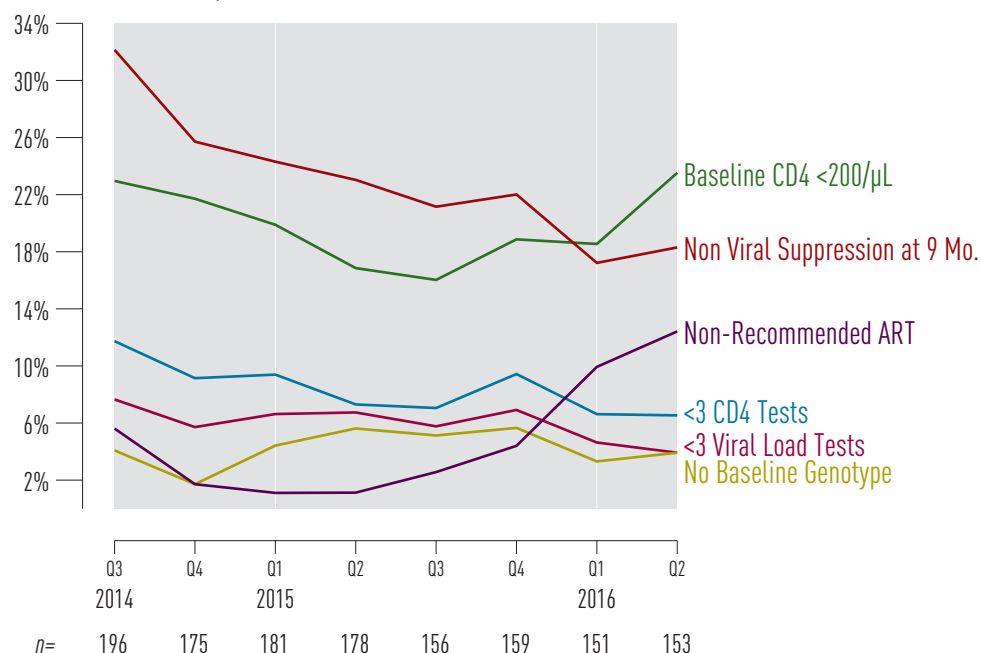
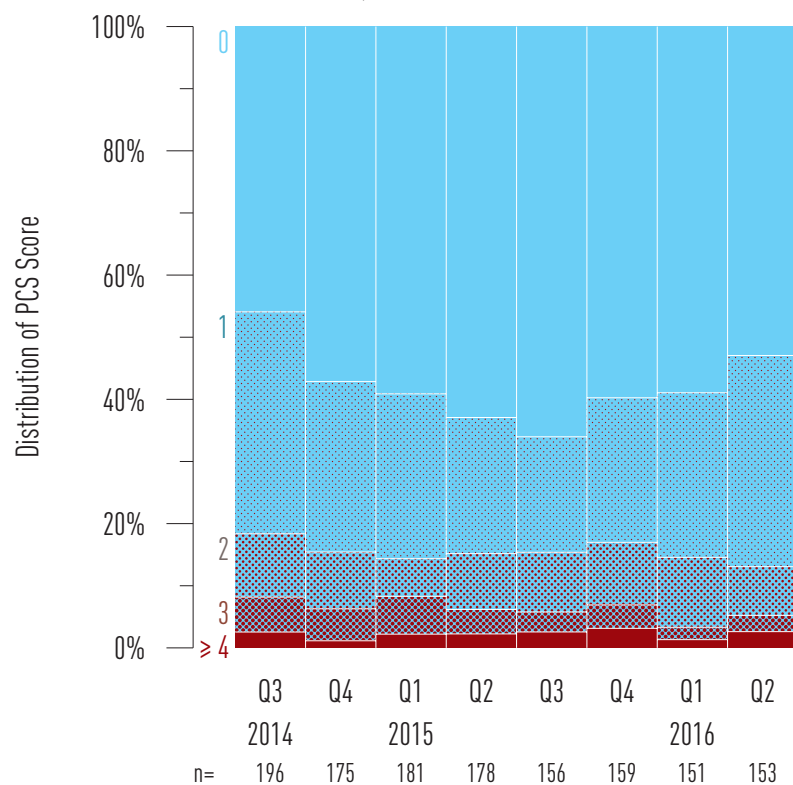


Figure 6.2 Historical Trends for PCS Score for Vancouver Coastal Health, 2014 Q3–2016 Q2 ^{10,11}



¹⁰ Data Source: British Columbia Centre for Excellence Drug Treatment Program (DTP) Database. Limitations: CD4 cell count capture is approximately 80%.

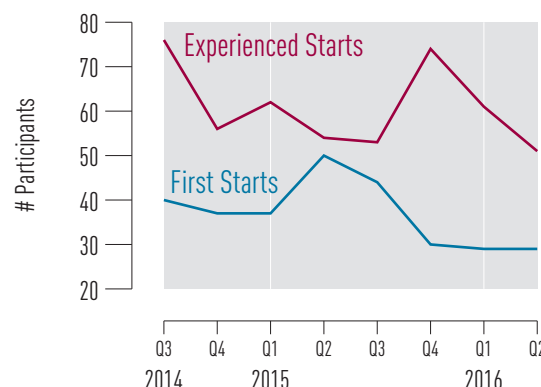
¹¹ Each quarter's data is calculated as the sum of the 4 quarters leading up to it. e.g. 2013 Q1 is calculated from 2012 Q2 – 2013 Q1. NB: A score of 0 is the best score and a score of 4 or more is the worst score.

Antiretroviral Uptake

In this section we present trends in ART uptake, the number and proportion of new HIV treatment initiations and the number of active and inactive DTP participants. Trends in ART uptake should be interpreted under the consideration of changing BC HIV treatment guidelines. BC HIV treatment guidelines are updated regularly by the BC-CfE Therapeutic Guidelines Committee and reflect those of the International AIDS Society. Most recent changes were made in 2012 and HIV treatment is now recommended for all HIV-positive adults regardless of CD4 cell count; as evidence demonstrates that early initiation of HIV treatment maximizes both the individual's health outcomes as well as the potential of ART as a form of HIV transmission prevention at a population level. As such, trends in the number and proportion of persons on ART and new ART starts (in both naïve and experienced persons) are expected to increase over time at higher CD4 cell counts.

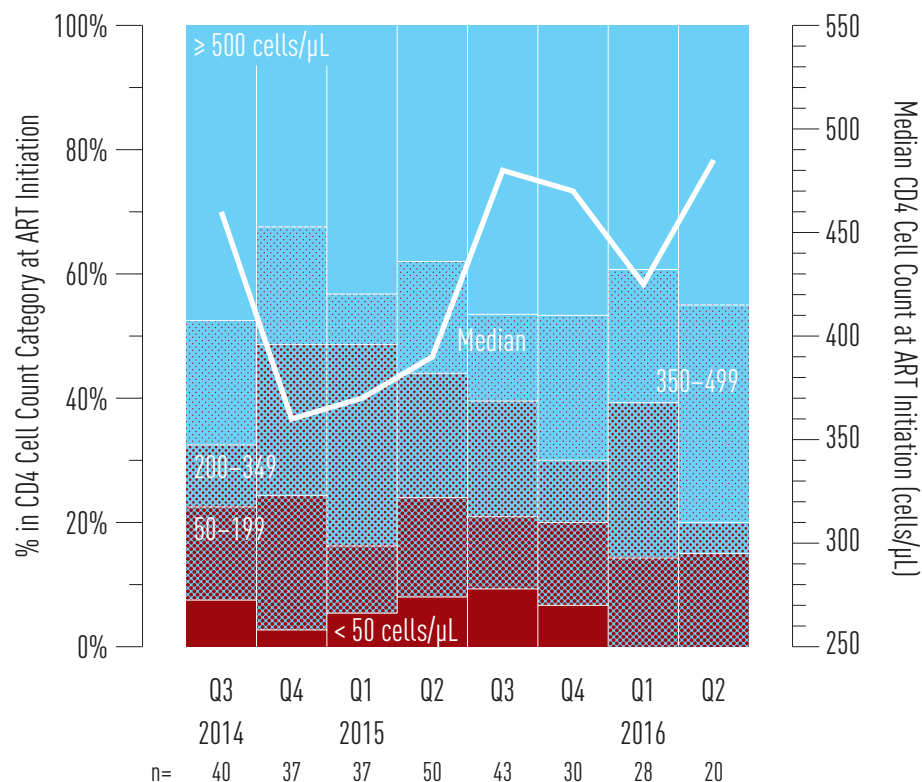
Indicator 7. New Antiretroviral Therapy Starts in Vancouver Coastal Health

Figure 7 BC-CfE Drug Treatment Program Enrollment: New ART Participants in Vancouver Coastal Health, 2014 Q3–2016 Q2 ¹²



Indicator 8. CD4 Cell Count at ART Initiation

Figure 8 CD4 Cell Count at ART Initiation of ART-Naïve DTP Participants in Vancouver Coastal Health, 2014 Q3–2016 Q2 ¹³



¹² Data Source: Drug Treatment Program Database
Limitation: DTP participants are designated to an HA based on most current residence provided by the participant.

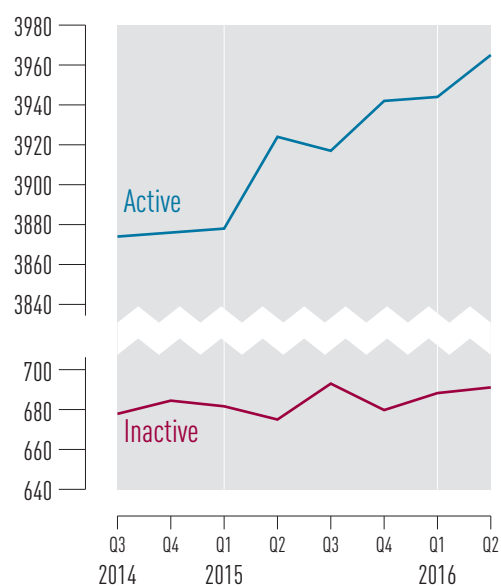
¹³ Data Source: Drug Treatment Program Database
Limitations: CD4 cell count data is approximately 80% complete.

Indicator 9. Active and Inactive DTP Participants

Table 3. Distribution of People on ART for Vancouver Coastal Health, 2016 Q2 ¹⁴

Age	< 30	127
	30–39	541
	40–49	1049
	≥ 50	2248
Gender	Male	3494
	Female	471
Exposure	MSM	1898
	PWID	1121
Total		3965

Figure 9 Active and Inactive DTP Participants for Vancouver Coastal Health, 2014 Q3–2016 Q2 ¹⁵



¹⁴ Data Source: Drug Treatment Program Database

Limitation: DTP participants are designated to an HA based on most current residence provided by the participant.

Definition:

'On antiretroviral therapy' defined as being on treatment in the current quarter

¹⁵ Active DTP participants: An individual who has had medication prescribed at least once in the preceding quarter.

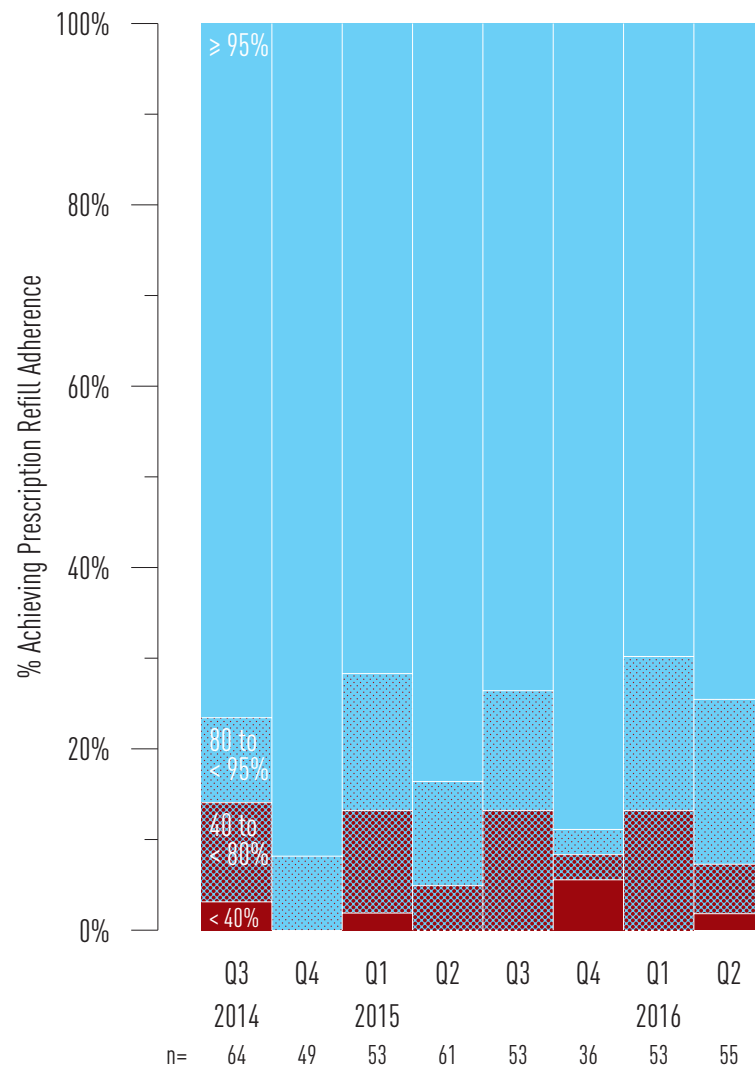
Inactive DTP participants: Persons no longer prescribed drugs through the HIV/AIDS Drug Treatment Program in the last quarter.

Antiretroviral Adherence Level

In this section we present trends in prescription refill adherence levels for individuals in their first year of treatment. Given that the benefits of ART are compromised in the presence of imperfect ART adherence, we expect to see the proportion of persons on ART achieving **near perfect adherence** (ie. $\geq 95\%$) to increase with time. Furthermore, it is important that trends in the proportion of ART users achieving prescription refill adherence of $\geq 95\%$ keep pace with new ART starts and increase among those continuing on ART.

Indicator 10. Antiretroviral Adherence

Figure 10 Distribution of Individuals by Adherence Level in 1st Year of Therapy, Based on Pharmacy Refill Compliance for Vancouver Coastal Health, 2014 Q3–2016 Q2 ¹⁶



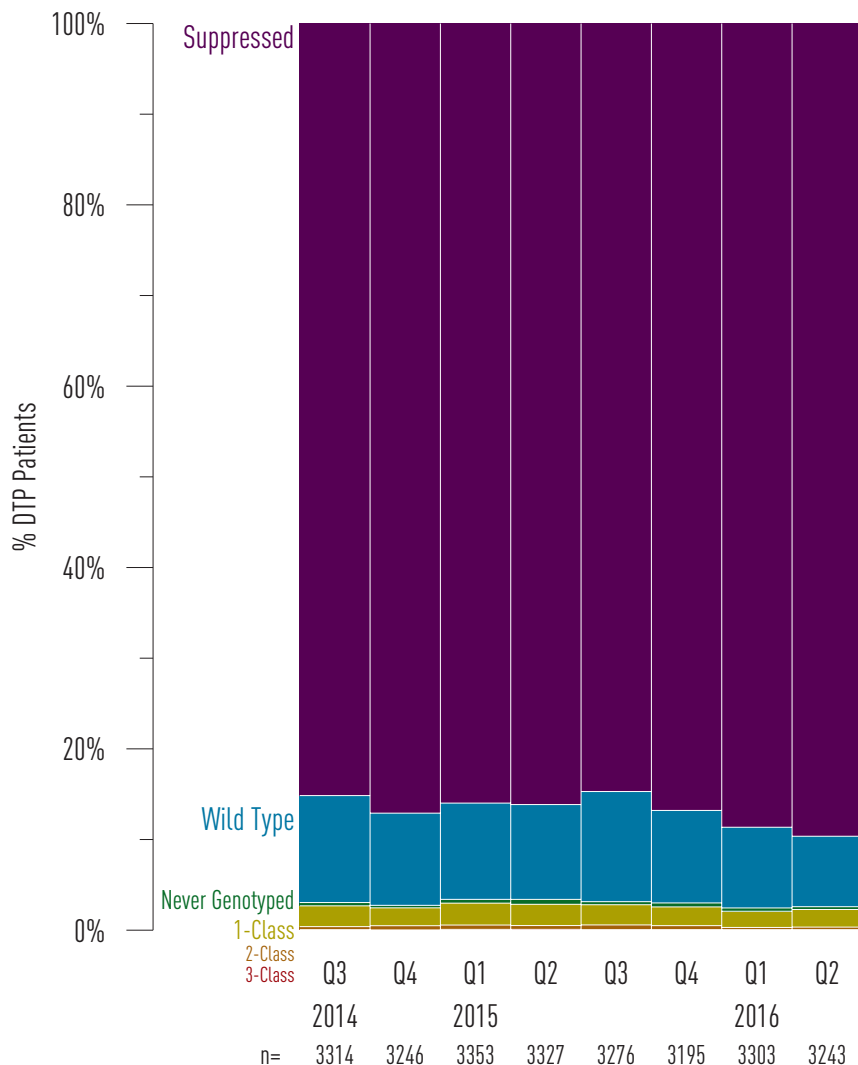
¹⁶ Data Source: Drug Treatment Program Database
Limitation: Prescription refill adherence is used as a proxy for patient adherence.

Resistance Testing and Results

Indicator 11. Resistance Testing and Results

In this section, we present trends in cumulative resistance testing by resistance category: **Suppressed** (where a DTP participant's viral load is too low to be genotyped); **Wild Type** (where no HIV treatment resistances were discovered), **Never Genotyped**, and Resistances to **one, two, three, or four** HIV treatment classes. Resistance testing prior to ART initiation is recommended in the BC HIV treatment primary care guidelines. Thus, it is expected that trends over time should find all persons enrolled in the DTP to have been genotyped. Trends over time should also show an increase in the proportion of DTP participants achieving a suppressed status and an increase in resistance testing should not lead to an increase in the number of ART resistances occurring.

Figure 11 Cumulative Resistance Testing Results by Resistance Category for Vancouver Coastal Health, 2014 Q3–2016 Q2 ¹⁷



¹⁷ Data Source: Drug Treatment Program Database

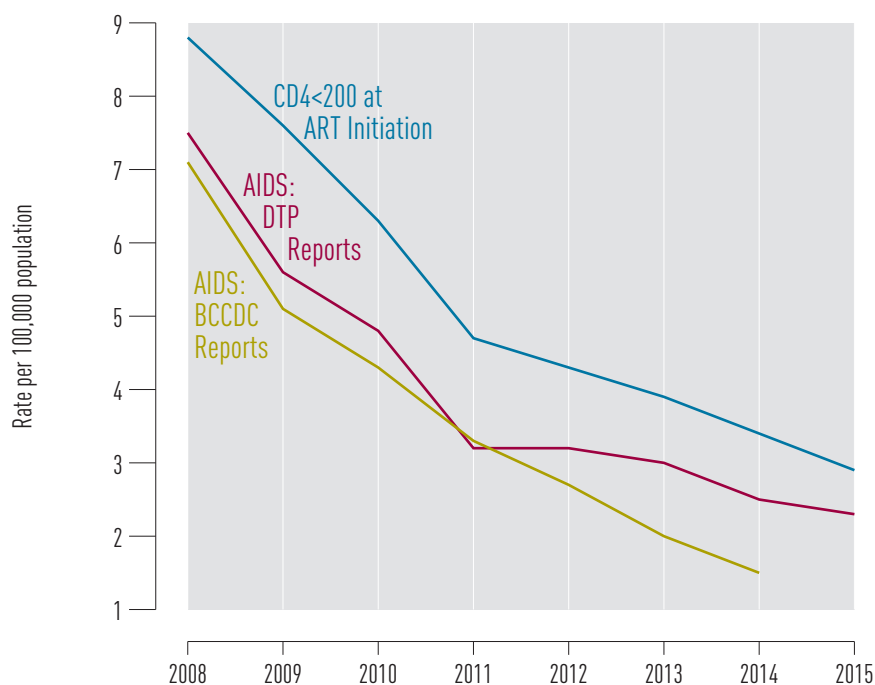
Limitation: DTP participants are designated to a HA based on most current residence provided by the participant.

AIDS-Defining Illness

Indicator 12. AIDS-Defining Illness

Improvements in ART and the expansion of ART province-wide has led to very low numbers of recorded AIDS cases across BC. However, interpreting trends in AIDS cases is challenging as AIDS reporting is passive in BC and it is likely that they are under-reported across all Health Authorities. In addition to under-reporting, methods of reporting AIDS cases are inconsistent across HA's and do not truly reflect the current reality of new AIDS diagnoses. Efforts will need to be made to improve under- and inconsistent reporting of AIDS cases across all HA's. The table below shows AIDS cases using three definitions. First, AIDS cases were defined as the number of physician-reported AIDS defining illness (ADI) in a given year. AIDS case reporting is a passive process and physicians can voluntarily report AIDS cases to the BCCDC or DTP. As such, we have plotted both **BCCDC reports** and **DTP reported AIDS cases**. We also show the proportion of persons **initiating ART with a CD4<200 cells/μL**.

Figure 12 AIDS Case Rate and Reports for Vancouver Coastal Health ¹⁸



CD4<200 at ART initiation

CASES
PER 100K

95 83 69 52 48 44 39 34
8.8 7.6 6.3 4.7 4.3 3.9 3.4 2.9

AIDS: DTP Reports

CASES
PER 100K

81 61 53 35 36 34 29 27
7.5 5.6 4.8 3.2 3.2 3.0 2.5 2.3

AIDS: BCCDC Reports

CASES
PER 100K

76 55 47 36 30 23 17 -
7.1 5.1 4.3 3.3 2.7 2.0 1.5 -

¹⁸ Data Source: DTP AIDS cases are obtained from the Drug Treatment Program Database; BCCDC AIDS cases are obtained from the BC-CDC; CD4<200 at ART initiation data came from the DTP database.

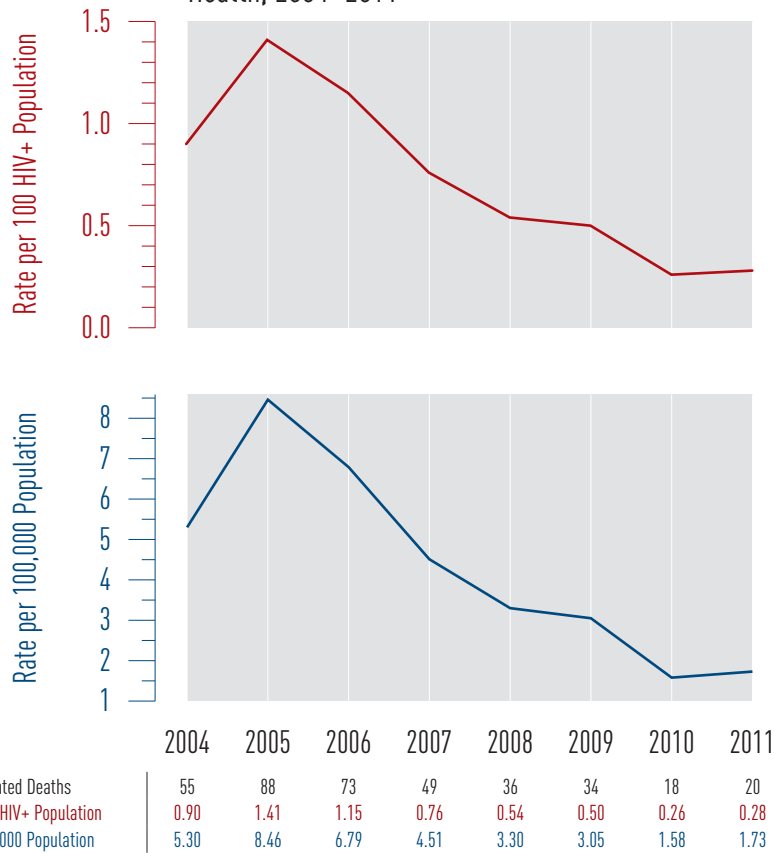
Limitation: AIDS case reporting was investigated using 3 definitions: First, using AIDS cases reported in AIDS case report forms from the DTP; Second, using AIDS cases reported via the BCCDC and third, using a CD4 cell count of <200 cells/μL at time of ART initiation using DTP data. AIDS case reporting is passive in BC, thus; AIDS case reporting is not well captured. The DTP sends out AIDS reporting forms to physicians annually. The BCCDC uses DTP AIDS case reports as well as physician AIDS case reports made directly to the BCCDC. Interpreting AIDS case reports should be done with these limitations in mind. AIDS data is updated annually as very few AIDS cases reports are reported in general and trends would be difficult to notice if reported quarterly.

HIV-Related Mortality

Indicator 13. HIV-Related Mortality

Evidence indicates that individuals who initiate treatment with recommended ART in a timely fashion may live near normal lifespans. Excess mortality among HIV positive persons is, therefore, an important measure of HIV care with a goal of minimizing HIV-related mortality in British Columbia.

Figure 13 HIV-Related Deaths by Year for Vancouver Coastal Health, 2004–2011 ¹⁹



¹⁹ Data Source: BC Vital Statistics

Limitation:

1. DTP participants are designated to an HA based on most current residence provided by the participant.
2. Mortality data is updated annually.
3. The most recent available data was used.

Appendices

Indicator 1: Test Episodes (thousands)		2011		2012		2013				2014				2015				2016			
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Vancouver Coastal Health		21.9	19.1	21.8	21.4	24.0	24.6	30.1	32.1	30.7	29.9	35.0	38.4	43.0	41.6	45.5	44.8	45.5	44.6	49.0	48.0
Gender	Female	6.9	7.4	9.0	9.0	10.3	10.7	13.6	14.8	14.0	13.6	15.8	17.9	20.1	19.6	21.8	21.7	21.8	21.2	23.0	23.1
	Male	8.6	8.8	10.5	10.3	11.4	11.9	14.3	15.3	14.4	14.3	16.8	18.3	20.4	19.8	21.8	21.4	21.9	21.7	24.1	23.3
	Other	0.4	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2
Age	< 30	5.8	5.8	6.4	6.2	7.1	7.1	7.7	8.2	8.3	8.1	8.8	9.0	10.2	9.9	10.2	10.3	11.4	11.1	11.1	11.2
	30–39	4.1	4.2	5.1	5.0	5.2	5.2	6.4	6.7	6.5	6.2	7.6	7.6	8.1	7.7	8.8	8.9	9.2	8.6	9.9	9.8
	40–49	2.6	2.9	3.4	3.4	3.5	3.8	4.8	5.1	4.6	4.6	5.4	5.7	6.1	5.9	6.5	6.4	6.5	6.3	7.1	6.9
	≥ 50	3.0	3.4	4.5	4.8	5.9	6.4	9.1	10.2	9.0	9.1	11.0	14.0	16.1	16.0	18.1	17.5	16.7	16.9	19.0	18.6
POC HIV Tests		5.9	2.4	2.1	1.9	2.1	1.7	2.0	1.8	2.1	1.9	2.1	2.0	2.4	2.0	1.7	1.6	1.6	1.5	1.7	1.4
North Shore / Coast Garibaldi		1.8	1.9	2.1	2.0	2.1	2.3	2.5	2.6	2.6	2.7	3.1	4.3	4.8	5.3	5.8	5.6	6.1	6.0	6.2	6.1
	Female (Non-prenatal)	0.9	0.9	1.1	1.0	1.1	1.2	1.3	1.4	1.3	1.3	1.6	2.2	2.5	2.8	3.1	3.0	3.3	3.2	3.2	3.2
	Male	0.9	0.9	1.0	1.0	1.0	1.1	1.2	1.3	1.3	1.3	1.5	2.1	2.2	2.5	2.7	2.6	2.8	2.8	3.0	2.9
Richmond		0.8	0.9	1.0	1.0	1.1	1.2	1.4	1.4	1.4	1.3	2.5	4.8	4.8	4.7	5.1	4.5	4.2	4.8	5.7	5.5
	Female (Non-prenatal)	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.7	0.7	0.7	1.3	2.6	2.6	2.4	2.7	2.5	2.3	2.6	3.0	3.1
	Male	0.4	0.5	0.5	0.5	0.5	0.6	0.7	0.7	0.7	0.7	1.2	2.2	2.3	2.2	2.4	2.0	2.0	2.2	2.7	2.4
Vancouver		19.2	16.3	18.7	18.5	20.9	21.1	26.2	28.1	26.7	25.8	29.4	29.2	33.3	31.6	34.6	34.7	35.1	33.9	37.0	36.4
	Female (Non-prenatal)	5.5	6.1	7.4	7.5	8.7	8.8	11.6	12.7	12.0	11.5	12.9	13.1	15.0	14.3	16.0	16.2	16.3	15.5	16.8	16.8
	Male	7.4	7.5	9.0	8.9	9.9	10.3	12.4	13.4	12.4	12.3	14.1	14.1	15.9	15.1	16.7	16.8	17.1	16.7	18.4	18.1

Indicator 2: **Rate of HIV Testing per 100,000**

		2009	2010	2011	2012	2013	2014	2015
Vancouver Coastal Health		4125.0	4140.2	4342.1	5827.1	8122.8	10313.6	11591.2
North Shore / Coast Garibaldi		2669.6	2668.7	2773.1	3285.9	4086.8	6406.3	8212.6
Richmond		1762.3	1841.3	1911.2	2444.9	3062.7	8145.7	8754.3
Vancouver		5485.8	5494.1	5776.9	7964.1	11409.7	12666.0	13929.8
Gender	Female	3548.0	3531.9	3737.8	5345.2	7815.8	10020.9	11437.2
	Male	4396.2	4470.0	4656.7	6151.2	8333.6	10496.6	11630.0
Age	< 30	4309.7	4296.9	4494.5	5512.1	6684.5	7686.3	8547.1
	30–39	7337.3	7558.1	7671.8	9514.2	12261.7	14294.2	15735.1
	40–49	4523.0	4444.0	4653.6	6218.5	9009.8	10917.7	12024.6
	≥ 50	1842.1	1909.4	2189.5	4164.6	7268.3	10764.9	12351.9

Indicator 3: New HIV Diagnoses		2011		2012		2013				2014				2015				2016			
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Vancouver Coastal Health	By Client Residence	57	41	43	33	33	32	31	44	40	25	37	49	32	27	37	34	33	24	24	39
	By Provider Address	65	42	47	38	37	38	31	49	49	29	41	54	36	32	44	40	35	23	25	45
Gender	Female	2	2	5	4	3	2	4	4	1	1	3	4	3	3	4	1	5	5	2	5
	Male	55	39	38	29	30	30	27	40	39	24	33	44	29	24	33	33	28	19	21	34
Age	< 30	13	12	11	10	7	13	7	10	14	6	11	12	6	9	9	9	10	5	6	9
	30–39	22	8	12	11	7	6	11	14	5	3	10	16	13	7	9	9	9	5	9	13
	40–49	13	13	12	6	11	9	8	8	11	10	8	7	5	5	6	9	4	6	4	5
	≥ 50	9	8	8	6	8	4	5	12	10	6	8	14	8	6	13	7	10	8	5	12
Exposure	MSM	43	30	33	25	25	22	19	32	29	20	27	36	21	17	25	25	21	12	–	–
	PWID	8	0	3	4	1	3	3	3	3	2	4	3	2	1	2	2	4	3	–	–
	HET	6	9	7	4	6	6	8	8	6	2	4	7	6	4	6	5	6	5	–	–
	Other	0	2	0	0	0	0	0	0	1	0	0	0	2	2	2	0	0	0	–	–
	NIR/Unknown	0	0	0	0	1	1	1	1	1	1	2	3	1	3	2	2	2	4	–	–

		2011		2012		2013		2014		2015		2016	
Indicator 3: New HIV Diagnoses (cont'd)		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
North Shore / Coast Garibaldi	By Client Residence	6	1	2	3	1	1	3	1	4	1	1	3
	By Provider Address	4	0	1	2	2	1	3	2	4	0	1	2
Richmond	By Client Residence	1	3	0	1	3	0	2	0	0	1	1	1
	By Provider Address	0	2	0	1	2	1	0	0	0	2	2	1
Vancouver	By Client Residence	50	37	41	29	29	31	26	43	36	23	35	45
	By Provider Address	61	40	46	35	33	36	28	47	45	27	38	51

Indicator 4: Stage of HIV Infection at Baseline

	VCH					Female					Male					< 30 years					30–39 years					40–49 years				
	'11	'12	'13	'14	'15	'11	'12	'13	'14	'15	'11	'12	'13	'14	'15	'11	'12	'13	'14	'15	'11	'12	'13	'14	'15	'11	'12	'13	'14	'15
Stage 0	49	44	34	46	43	0	6	1	2	8	49	38	32	44	35	9	16	12	19	12	21	15	12	15	15	16	7	8	7	5
Stage 1	37	33	39	38	28	5	4	3	8	4	32	28	36	30	24	12	8	15	7	9	12	13	13	13	6	6	7	4	9	6
Stage 2a	33	19	34	16	13	5	1	3	2	2	28	18	31	14	11	8	4	8	2	5	10	3	9	2	2	10	8	7	6	3
Stage 2b	24	18	15	19	20	4	3	2	0	2	20	15	13	19	17	5	4	0	4	4	5	4	10	5	6	9	6	3	5	3
Stage 3	27	34	31	23	23	3	2	4	5	3	24	32	27	18	20	1	5	2	3	3	5	6	2	6	3	8	8	16	4	5
Unknown	17	9	4	16	12	0	1	0	1	0	16	8	4	15	12	4	5	0	3	1	7	2	1	7	3	2	0	0	2	4
Total	187	157	157	158	139	17	17	13	18	19	169	139	143	140	119	39	42	37	38	34	60	43	47	48	35	51	36	38	33	26

	≥ 50 years					MSM					PWID					Heterosexual					Other Exposure					NIR/Unknown				
	'11	'12	'13	'14	'15	'11	'12	'13	'14	'15	'11	'12	'13	'14	'15	'11	'12	'13	'14	'15	'11	'12	'13	'14	'15	'11	'12	'13	'14	'15
Stage 0	3	6	2	5	11	45	35	25	42	27	2	4	6	3	4	2	5	3	1	9	0	0	0	0	0	0	0	0	0	3
Stage 1	7	5	7	9	7	28	26	30	22	20	2	1	3	6	0	6	6	4	8	7	1	0	0	1	0	0	0	2	1	1
Stage 2a	5	4	10	6	3	23	14	26	11	9	4	4	4	0	0	5	1	4	3	2	1	0	0	0	1	0	0	0	2	1
Stage 2b	5	4	2	5	7	17	13	13	12	14	2	2	0	2	3	5	3	2	4	2	0	0	0	0	1	0	0	0	1	0
Stage 3	13	15	11	10	12	12	22	16	9	10	1	1	1	0	3	13	9	12	9	7	1	0	0	3	0	0	2	2	2	3
Unknown	4	2	3	4	4	13	7	3	12	7	2	0	0	0	0	1	1	0	1	1	1	0	1	0	0	0	1	0	3	4
Total	37	36	35	39	44	138	117	113	108	87	13	12	14	11	10	32	25	25	26	28	4	0	1	4	2	0	3	4	9	12

Indicator 5: HIV Cascade of Care			DIAGNOSED		LINKED		RETAINED		ON ART		ADHERENT		SUPPRESSED	
Vancouver Coastal Health			4768		4620		4105		3931		3659		3243	
Age Category	< 30		206		140		123		115		102		90	
	30–39		622		601		522		498		434		382	
	40–49		1218		1191		1043		988		923		814	
	≥ 50		2722		2688		2417		2330		2200		1957	
Age Category and MSM Status	MSM	< 30	60		54		47		43		39		37	
		30–39	270		263		221		216		184		164	
		40–49	490		485		448		422		396		365	
		≥ 50	1340		1334		1238		1198		1147		1052	
	Non-MSM	< 30	21		20		19		18		12		9	
		30–39	142		137		131		121		102		84	
		40–49	344		342		314		297		268		209	
		≥ 50	679		675		659		631		572		464	
	Unknown	< 30	124		66		56		54		51		44	
		30–39	210		200		170		161		148		134	
		40–49	385		364		280		269		259		240	
		≥ 50	704		679		520		501		481		441	
Gender	Male		4188		4092		3604		3460		3247		2907	
	Female		580		527		501		471		412		336	

Indicator 5: HIV Cascade of Care		DIAGNOSED	LINKED	RETAINED	ON ART	ADHERENT	SUPPRESSED
Injection	PWID	1248	1242	1191	1132	1012	811
Drug Use	Non-PWID	2411	2381	2180	2096	1977	1814
	Unknown	1109	996	734	703	670	618
MSM Status	MSM	2160	2137	1955	1879	1766	1618
	Non-MSM	1185	1174	1124	1067	954	766
	Unknown	1423	1309	1027	985	939	859
Health Authority	North Shore / Coast Garibaldi	307	301	283	272	253	222
	Richmond	153	143	129	126	118	109
	Vancouver	4306	4174	3692	3533	3288	2912

Indicator 6: **Programmatic Compliance Score (PCS)**

	2014 Q3	Q4	2015 Q1	Q2	Q3	Q4	2016 Q1	Q2
< 3 CD4 Tests	11.7%	9.1%	9.4%	7.3%	7.1%	9.4%	6.6%	6.5%
< 3 Viral Load Tests	7.7%	5.7%	6.6%	6.7%	5.8%	6.9%	4.6%	3.9%
No Baseline Genotype	4.1%	1.7%	4.4%	5.6%	5.1%	5.7%	3.3%	3.9%
Baseline CD4 < 200 cells/ μ L	23.0%	21.7%	19.9%	16.9%	16.0%	18.9%	18.5%	23.5%
Non-Recommended ART	5.6%	1.7%	1.1%	1.1%	2.6%	4.4%	9.9%	12.4%
Non Viral suppression at 9 Mo.	32.1%	25.7%	24.3%	23.0%	21.2%	22.0%	17.2%	18.3%
PCS Score: 0	90	100	107	112	103	95	89	81
PCS Score: 1	70	48	48	39	29	37	40	52
PCS Score: 2	20	16	11	16	15	16	17	12
PCS Score: 3	11	9	11	7	5	6	3	4
PCS Score: 4 or more	5	2	4	4	4	5	2	4
Total (n=)	196	175	181	178	156	159	151	153

Indicator 7: **New DTP ARV Participants**

First Starts	40	37	37	50	44	30	29	29
Experienced Starts	76	56	62	54	53	74	61	51

Indicator 8: **CD4 Cell Count at ART Initiation for ARV-Naïve DTP Participants**

CD4 \geq 500	19	12	16	19	20	14	11	9
CD4 350–499	8	7	3	9	6	7	6	7
CD4 200–349	4	9	12	10	8	3	7	1
CD4 50–199	6	8	4	8	5	4	4	3
CD4 < 50	3	1	2	4	4	2	0	0
<i>CD4 Median (cells/μL)</i>	<i>460</i>	<i>360</i>	<i>370</i>	<i>390</i>	<i>480</i>	<i>470</i>	<i>425</i>	<i>485</i>
Total (n=)	40	37	37	50	43	30	28	20

Indicator 9: **Active and Inactive DTP Participants**

Active DTP Participants	3874	3876	3878	3924	3917	3942	3944	3965
Inactive DTP Participants	667	674	671	664	683	669	678	681

Indicator 10: **Antiretroviral Adherence**

\geq 95%	49	45	38	51	39	32	37	41
80% to < 95%	6	4	8	7	7	1	9	10
40% to < 80%	7	0	6	3	7	1	7	3
< 40%	2	0	1	0	0	2	0	1
Total (n=)	64	49	53	61	53	36	53	55

Indicator 11: Resistance Testing and Results

	2014 Q3	Q4	2015 Q1	Q2	Q3	Q4	2016 Q1	Q2
Suppressed	2822	2827	2883	2866	2775	2773	2928	2907
Wild Type	391	330	356	348	398	326	294	252
Never Genotyped	12	9	14	18	11	14	12	10
1-Class	76	64	81	78	73	66	59	63
2-Class	11	15	16	14	17	14	8	9
3-Class	2	1	3	3	2	2	2	2
Total (n=)	3314	3246	3353	3327	3276	3195	3303	3243

Indicator 12: AIDS-Defining Illness		2007	2008	2009	2010	2011	2012	2013	2014	2015
CD4 < 200 at ART initiation	Cases	130	95	83	69	52	48	44	39	34
	<i>Rate per 100,000</i>	<i>12.1</i>	<i>8.8</i>	<i>7.6</i>	<i>6.3</i>	<i>4.7</i>	<i>4.3</i>	<i>3.9</i>	<i>3.4</i>	<i>2.9</i>
AIDS Cases (DTP Reports)	Cases	81	81	61	53	35	36	34	29	27
	<i>Rate per 100,000</i>	<i>7.5</i>	<i>7.5</i>	<i>5.6</i>	<i>4.8</i>	<i>3.2</i>	<i>3.2</i>	<i>3.0</i>	<i>2.5</i>	<i>2.3</i>
AIDS Cases (BCCDC Reports)	Cases	72	76	55	47	36	30	23	17	–
	<i>Rate per 100,000</i>	<i>6.7</i>	<i>7.1</i>	<i>5.1</i>	<i>4.3</i>	<i>3.3</i>	<i>2.7</i>	<i>2.0</i>	<i>1.5</i>	–

Indicator 13: HIV-Related Mortality		2004	2005	2006	2007	2008	2009	2010	2011
Vancouver Coastal Health		55	88	73	49	36	34	18	20
Per 100 HIV+ Population		0.90	1.41	1.15	0.76	0.54	0.50	0.26	0.28
Per 100,000 Population		5.30	8.46	6.79	4.51	3.30	3.05	1.58	1.73